The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 21 CHICAGO, ILLINOIS NOVEMBER 24, 1917

COMPARATIVE RESULTS OF VARIOUS FUNCTIONAL KIDNEY TESTS

BASED ON A SERIES OF CASES *

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So long as the chief cause of death following operations on the genito-urinary tract continues to be uremia, just so long will the concern of the up-to-date conscientious surgeon be the determination of the functional efficiency of the kidneys. Disregard for this important matter too often furnishes the mark of distinction between the skilled urologist and the general surgeon, and explains the relatively high mortality rate for urologic operations in the experience of the general surgeon. Investigation recently[1] revealed the alarming statistics that in twenty-six hospitals in this and neighboring states the mortality for nephrectomy and prostatectomy at the hands of general surgeons was 25.9 and 22.5 per cent., respectively, as contrasted with 7.7 and 4.33 per cent. in seven times the number of operations by eight of the world's most noted urologists. In other words, this means that in a large minority of such operations from 75 to 80 per cent. of deaths are avoidable.

Unfortunately, the urologic world has been almost submerged by a plethora of functional kidney tests — good, bad and indifferent. These are divisible into those of elimination and those of retention, and comprise the forty-five given in Table 1, in the order of their appearance.

It is conceded that the most accurate method of determining the kidney function is a quantitative metabolic study. At the same time it is fully realized that in the vast majority of instances such a procedure is not only impracticable, but not infrequently fallible. Thus the profession has turned to, employed, and discarded one after another of the long list of functional tests; nor is the disputed question yet settled as to which is the best.

In the past it has been the practice of urologists in various parts of the world to employ one or more tests in their particular groups of cases, drawing conclusions as to which was the best. Synchronously or subsequently in another quarter of the globe another investigator has reported his researches, relying on one or more other tests in an entirely different group of cases, but nevertheless asserting the discovery of the most reliable test, irrespective of the fact that he may have had little or no experience with the beloved idol of his professional brother. It may be true that there are several tests equally good. On the other hand, the fact may be that one of the host is truly superior to all the rest, not only as to reliability, but also as to practicability.

It occurred to us that more accurate information relative to the comparative value of the functional tests might be obtained by subjecting each of a group of patients to all of a series of some of the more reliable, and commonly employed, kidney tests. Accordingly, for the past two years, when not inadvisable, we have carried out painstakingly and impartially the following ten functional kidney tests: indigocarmin, phenolsulphonephthalein, the total nonprotein nitrogen of the blood, the urea nitrogen of the blood and urine, the urine urea by the sodium hypobromite method (Doremus-Hinds ureometer), Ambard's ureosecretory constant of the blood and urine, the creatinin of the blood, and the cryoscopy of the blood and urine.

These ten tests have been selected for study from the extensive list, chiefly because several of them are routine methods and are believed to be the most reliable and practical. A number of others, namely, phlorizin, potassium iodid and lactose, experimental

TABLE 1.—FUNCTIONAL KIDNEY TESTS

TESTS OF ELIMINATION	TESTS OF RETENTION
Total quantity of urine.	Total urinary solids
Odor after asparagus (1820)	Normal urinary salts (alkaline chlorids, phosphates and sulphates, and alkaline earths) (excretion)
Odor after turpentine (1820)	
Opium (1857)	
Mercury (1865)	
Iodid of ethyl (1867)	Urine urea (excretion) (1872)
Potassium iodid (1867)	Total nitrogen (1883)
Potassium bromid (1867)	Cryoscopy (blood, urine) hemorenal index (1898)
Indigo (1867)	
Anilin (1867)	Electrical conductivity (blood, urine) hemorenal index (1900-1904)
Turmeric (1867)	
Alkaline carbonates (1867)	Wright's excretory quotient (1904)
Fuchsin (1877)	Chlorids (blood, urine) hemorenal index (1907)
Quinin sulphate (1877)	
Salicylic acid (1877)	
Benzoic (hippuric) acid (1879)	Urea nitrogen (blood, urine) (1908)
Methylene blue (1897)	
Rosanilin (1898)	Ambard's constant (ureosecretory index) (1910)
Phlorizin (1899)	
Indigocarmin (1903)	Urinary toxicity (1910)
Experimental polyuria (1904)	Acidosis (1910)
Diastase (1908)	Blood nonprotein nitrogen (1912)
Phenolsulphonephthalein (1910)	Creatinin (1914)
Pepsin (1912)	Creatin (1914)
Uranin (sodium fluorescein) (1913)	Uric acid (1914)
	Indican (1914)
Lactose (1913)	Phosphates (1916)
Trypanblue (1914)	

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. Thomas, B. A.: The Significance of Specialism in Surgery with Reference Especially to Genito-Urinary Surgery, Pennsylvania Med. Jour., 1916, **20**, 101.

polyuria, acidosis and chlorids, might have been included, but would probably not have proved more meritorious than those utilized, and would merely have imposed an additional inexcusable ordeal for the patients. Phlorizin has few adherents today. Whether or not the test is too sensitive, grave fallacies or inconsistencies have arisen in the study of both normal and diseased kidneys, rendering the test undependable in the experience of most investigators. Potassium iodid and lactose in conjunction with salt and water possess mainly a clinical interest, and have been utilized for the differentiation of tubular and glomerular nephritis. This is a matter which interests internists rather than surgeons. Moreover, the method lacks universal confirmation. The experimental polyuria test of Albarran has much to recommend it, but is open to the following objections: (1) difficulties with ureteral catheters and accurate collections of the respective urines; (2) unilateral reflex stimulation or inhibition of function, incident to catheterization; (3) the fact that two or three hours is an unjustifiably long time to permit the ureteral catheter to remain in situ; (4) the inability of some patients to drink the required amount of water; (5) occasionally, the failure to produce polyuria by increased water intake, and (6) in slight lesions of the kidneys the inability to detect differences between the two sides. Acidosis and the phosphate and chlorid content of the blood are estimations promissory of much value in nephritis, but as yet possess only clinical and research importance.

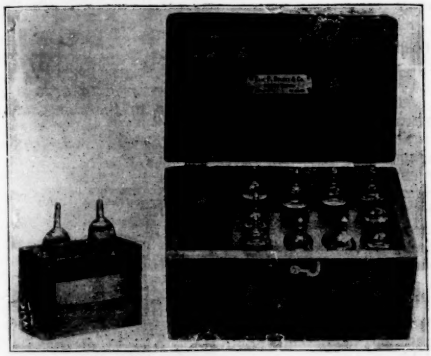

Fig. 1.—Colorimeter for the quantitative determination of indigocarmin.

TECHNIC EMPLOYED IN TESTS

Indigocarmin.—In the cases furnishing the text of this report, in order to parallel the method of employment of phenolsulphonephthalein, indigocarmin was administered intramuscularly,[2] although for years in many cases we have injected the dye intravenously and now prefer this method for chromo-ureteroscopy in the unilateral determination of kidney function. The quantitative determinations were made for three hourly intervals, the Duboscq[3] or a recently improvised less expensive colorimeter (Fig. 1) being utilized. Due consideration was accorded the onset of elimination and the quantitative output, although greatest reliance was placed on the index of elimination,[4] that is, the ratio of output for the first and third hours, respectively, taking into consideration the onset and alternative interval quantitative output, and hence the stability of kidney function.

Phenolsulphonephthalein.—The application of this test varied from that stipulated by Rowntree and Geraghty[5] in the following respects: The quantitative output was computed for three instead of two hours, and the elimination for the first hour was measured from the time the drug was administered, not from the time it first appeared. It has frequently happened that twenty minutes, a half hour, or even an hour or more, has elapsed following the injection of phenolsulphonephthalein before its appearance in the urine. It has therefore seemed more rational, scientific and accurate to regard the quantitative output for the first hour from the time the drug was administered; otherwise the quantity commonly regarded as eliminated for the first hour comprises that for the hour after elimination begins, plus the time required for it to appear. The latter is a wide variable in renal disease, and, we believe, should not be disregarded.

Determination of Nonprotein Nitrogen of the Blood.—The method employed for the estimation of the nonprotein nitrogen of the blood is in general that followed by Folin and Denis.[6]

Ten c.c. of blood are withdrawn from a vein and placed in a 100 c.c. volumetric flask containing about 5 drops of a 20 per cent. solution of potassium oxalate. The flask is immediately shaken and filled up to the 100 c.c. mark with methyl alcohol — acetone free. The flask is vigorously shaken and allowed to stand, tightly stoppered, for at least two hours. The fluid is then separated from the coagulum by filtering. From 2 to 3 drops of a saturated alcoholic solution of zinc chlorid are now added to the filtrate, and after a few minutes the mixture is again filtered.

Ten c.c. of the alcoholic filtrate, which are the equivalent of 1 c.c. of blood, are pipetted into each of two thin glass test tubes, about 200 mm. in length and 25 mm. in diameter. Four-tenths gm. of potassium sulphate, 1 drop of a 10 per cent. copper sulphate solution and 1 c.c. of concentrated sulphuric acid—all reagents to be of highest purity—are added to each tube in the foregoing order. The test tubes are then placed in convenient holders and heated over small microburner gas flames until the mixture becomes completely colorless. As soon as the test tubes have become cool, 8 c.c. of distilled water are added.

Aeration of the ammonia is carried out in the following way:

Into each of two 500 c.c. Erlenmeyer flasks are placed 200 c.c. of distilled water., 10 c.c. of fiftieth-normal sulphuric acid and a few drops of the indicator—Congo red. Each flask is now closed with a two-hole stopper having a Folin tube passing nearly to the bottom of the flask.

The apparatus is now adjusted (Fig. 2) in the following order: Woulfe bottle; Flask C, Test Tube D, containing the

2. Thomas, B. A.: Ueber die Chromoureteroskopie in der funktionellen Nierendiagnostik, Ztschr. f. Urol., 1911, **5**, 259; The Value of Chromo-Ureteroscopy in Functional Kidney Diagnosis, Surg., Gynec. and Obst., April, 1911; The Results of Two Hundred Chromo-Ureteroscopies Employing Indigocarmin as a Functional Kidney Test, THE JOURNAL A. M. A., Jan. 18, 1913, pp. 185-188.

3. Thomas, B. A.: The Quantitative Determination of Functional Renal Sufficiency by the Duboscq Colorimeter: Indigo versus Phenolsulphonephthalein, Am. Jour. Med. Sc., September, 1911.

4. Thomas, B. A.: The Rôle of Functional Kidney Tests and Preoperative and Postoperative Treatment in the Reduction of Prostatectomy Mortality, THE JOURNAL A. M. A., Nov. 28, 1914, pp. 1909-1915.

5. Rowntree and Geraghty: An Experimental and Clinical Study of the Functional Activity of the Kidneys by Means of Phenolsulphonephthalein, Jour. Pharmacol. and Exper. Therap., 1910, **1**, No. 6.

6. Folin and Denis: Jour. Biol. Chem., 1912, **11**, 527.

digested mixture, and the acid wash bottle. Between Test Tube D and the acid wash bottle, Flask C′ and Test Tube D′ are placed as a control. A sufficient quantity of a saturated solution of sodium hydroxid is added to Test Tubes D and D′ until a bluish color appears.

By means of suction, air is made to pass through the apparatus slowly at first and then rapidly for from twenty to twenty-five minutes. The apparatus is then disconnected and the contents of Flasks C and C′ are titrated against fiftieth-normal sodium hydroxid and the estimation of nonprotein nitrogen is made. One c.c. of fiftieth-normal sulphuric acid is neutralized by 0.00028 gm. of nonprotein nitrogen.

Determination of Urea in Urine.—For rapid determination of the amount of urea in the urine, we have made use of the hypobromite method.

The apparatus, Doremus' ureometer, consists of a graduated fermentation tube mounted on a glass foot and graduated arm with glass stopcock for the introduction of urine.

First, urine should be introduced into the graduated arm and the glass stopcock closed, the opening being full of urine. The graduated fermentation tube should then be rinsed free from all traces of urine and the graduated arm filled with urine to the 0 mark. The graduated fermentation tube should now be filled with hypobromite solution.[7] By means of the glass stopcock, 1 c.c. of urine is permitted to flow slowly into the graduated fermentation tube. The urine will rise through the hypobromite, and the urea will instantly decompose, giving off nitrogen gas. The ureometer indicates either the milligrams of urea in 1 c.c. of urine or the grams of urea per fluidounce of urine.

A twenty-four hour specimen should be collected and mixed, and a specimen of this taken for the test if accurate data are to be had.

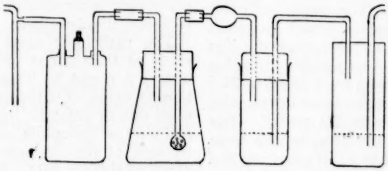

Fig. 2.—Arrangement of apparatus for aeration in nitrogen determination.

Determination of Urea Nitrogen of Blood and Urine.—We use the following method:

Three c.c. of blood are introduced into each of two test tubes of dimensions similar to those employed for the nonprotein nitrogen determination. From 2 to 3 drops of 20 per cent. solution of potassium oxalate are added. The mixture is well shaken and 3 c.c. (of a 0.6 per cent. solution) of acid potassium phosphite, one urease tablet,[8] which has been previously pulverized, and about 5 to 10 drops of amylic alcohol, the latter to prevent foaming in the aeration process, and then 5 c.c. of distilled water are added. The same apparatus as employed for the nonprotein nitrogen is used, and with the test tubes immersed to the level of the contained mixture, in beakers of water at 50 C., aeration is carried out for from two to three minutes. At the end of this time from 3 to 5 gm. of potassium carbonate are added to each test tube, and aeration is continued for fifteen minutes. In estimating urea nitrogen of the urine, 0.5 c.c. of urine should be used and the same technic employed as described above.

The final estimation is made by titrating the contents of the flask against fiftieth-normal sodium hydroxid, and the computation is made in the same way as for nonprotein nitrogen.

Creatinin of the Blood.—In the estimation of the creatinin of the blood we have used the Duboscq colorimeter and the following application of Folin's method:

To 6 c.c. of blood in a graduated 50 c.c. centrifuge tube, 5 drops of a 20 per cent. solution of potassium oxalate and enough distilled water to bring the mixture up to the 30 c.c. mark are added. The mixture is then stirred until the red blood corpuscles have become laked. Then 1 gm. of picric acid is added and the mixture again stirred at intervals with a glass rod until it becomes a light yellow. The tube is then centrifuged and the supernatant fluid filtered. To 10 c.c. of the filtrate is added 0.5 c.c. of 10 per cent. sodium hydroxid, and a similar amount of 10 per cent. sodium hydroxid is added to 1 c.c. of standard creatinin in saturated picric acid. The reading is then made by means of the Duboscq colorimeter exactly at the end of ten minutes after the addition of the sodium hydroxid.

The creatinin standard solution is made up after the method of Benedict:[9] fifteen mg. of creatinin are dissolved in 15 c.c. of tenth-normal hydrochloric acid, and 1 c.c. of the mixture is diluted up to the 100 c.c. mark with saturated picric acid solution. Ten c.c. contain 1.5 mg. of creatinin.

Estimation of the Ambard Quotient.—Ambard's quotient, or the ureosecretory constant, resulted from a series of studies[10] of the laws governing the concentration of urea in urine.

Ambard's First Law: By experimentation Ambard found[11] that if the kidney excreted urine which maintained a constant urea concentration, its urea output during any given time varies as the square of the concentration of urea in the blood of any given person.

C=grams of urea per liter of urine.
Ur=grams of urea per liter of blood.
V=amount of urine excreted in twenty-four hours.
Vxc=urea output in twenty-four hours.

$$\text{Constant} = \frac{Ur}{\sqrt{c}}$$ provided the urine has a constant concentration.

Ambard's Second Law: By further study[12] Ambard found that variations in the concentration of the urea in the urine altered the relation between the rate of urea excretion and the urea concentration of the blood. After many examinations Ambard concluded (second law) that when a urine of variable concentration is excreted, if the blood urea remains at a constant concentration, the urea output for any given time will be inversely proportional to the square root of the urea concentration in the urine. Twenty-five gm. of urea per liter D_{25} was adopted as the standard concentration of urea in urine. D_{25} equals $\frac{D \times \sqrt{c}}{5}$.

Ambard's third law states that when the urea concentration of the blood and of the urine varies in direct proportion to the square of the urea concentration in the blood and in inverse proportion to the square root of the urea concentration in the urine, the ureosecretory constant $= \frac{Ur}{\frac{D \times \sqrt{c}}{5}}$ or $\frac{Ur}{D}$.

Estimation of Ambard's constant in a case of prostatic hypertrophy[25]:

Amount of urine collected for one hour = 60 c.c.; V = 60 × 24 = 1,440 c.c. — urea per centimeter in urine = 20 per

7. The hypobromite is prepared as follows: One hundred gm. of sodium hydroxid are dissolved in 250 c.c. of distilled water. To 20 c.c. of sodium hydroxid solution, in a 50 c.c. graduated cylinder, 2 c.c. of bromid are added; this is shaken and enough distilled water is added to bring the mixture up to the 44 c.c. mark. This makes the hypobromite solution, and as it does not keep well it should be made up fresh each day.

8. The soy bean urease tablets are put up in this convenient form by the Arlington Chemical Company, Yonkers, N. Y. Each tablet contains sufficient enzyme for a single test.

9. Benedict: Jour. Biol. Chem., 1914, **18**, 183.

10. Ambard: Etude sur les concentrations urinaires, Arch. internat. de physiol., 1909, **8**, 437.

11. Ambard: Rapports entre le taux de l'urée dans le sang et l'élimination de l'urée dans l'urine, Comp. rend. Soc. de biol., 1910, **69**, 411.

12. Ambard: Rapports de la quantité et du taux de l'urée dans l'urine, la concentration de l'urée du sang étant constante, Compt. rend. Soc. de biol., 1910, **69**, 506.

liter. Urea output in urine = 1,440 × 20 per cent. = 28.80 (D).

This amount corrected for concentration of 25 per cent. = $28.80 \times \frac{\sqrt{20}}{5} = 28.80 \times 0.88 = 25.34$ —.

Urea estimation of the blood = 0.514 gm. per liter.

Ambard's constant = $\frac{Ur}{\sqrt{D_{bl}}} = \frac{0.514}{\sqrt{25.34}} = \frac{0.514}{5} = 0.1$.

The normal constant has been found to vary between 0.06 and 0.08.

Cryoscopy.—The Beckmann cryoscope, necessitating the preliminary determination each time of the lowering of the freezing-point of distilled water, was employed. The details of cryoscopy need not be given, since in our experience the δ blood and the Δ of the urine have been of all the tests the least reliable. Aside from comparative tests on the urines from each kidney separately, cryoscopy, as a test of kidney efficiency, is of minimal value.

COMPARATIVE RESULTS OF TESTS

In order better to display the comparative results of these various functional kidney tests, they have been tabulated in a number of exemplary cases, normal and pathologic, the latter including mostly retention of urine, due to prostatic or vesical orifice obstruction, or to urethral stricture, with a few nephritics and other renal diseases, mainly surgical.

In Table 2, we enumerate a few absolutely normal ambulatory patients who have been subjected to two or more of the functional tests. The number of cases is small, but we believe sufficient to permit judgment as to the results for the functional tests studied. For indigocarmin this was found to be from five to twelve minutes[13] for onset of elimination; from 18.45 to 24.5 per cent. for quantitative output for three hours, with an index of elimination of from 2.9 to 6.7. For phenolsulphonephthalein the respective figures were nine to fourteen minutes, 38.19 to 77.99 per cent. and 1.6 to 16.1. It will be observed that phenolsulphonephthalein was not eliminated as early as indigo, that there was greater variability in quantitative output and extreme variability as to index of elimination, the substance apparently not lending itself well to this method of determination, at least for hourly periods. In this connection the recent animal experimental work of Kendall[14] is of paramount importance. He finds that the phenolsulphonephthalein output is, fundamentally, the ratio between its rate of reduction and the supply of oxygen in the body, and in any given case is dependent on so many factors that its localization effects in any one organ are impossible. If this work is substantial clinically, it will explain many of the singular results heretofore obtained from the employment of this drug as a functional kidney test.

In normal persons the total noncoagulable nitrogen of the blood varied from 25 to 31 mg., and the blood urea nitrogen from 10 to 15 mg. per hundred c.c. The urine urea nitrogen, on the other hand, varied from 58 to 210 mg. per hundred c.c., and in our experience presented nothing of value over the Doremus ureometer method with sodium hypobromite, in which the findings were from 9 to 17 mg. per cubic centimeter. Correspondingly, the ureosecretory index of Ambard showed results of from 0.03 to 0.09. It will be observed that of the retention tests employed, the noncoagulable nitrogen and the urea nitrogen of the blood showed the greatest uniformity of results and ran a close parallelism. Our results, therefore, do not support the contention of Smith[15] that Ambard's constant or McLean's modification is a more reliable index as to renal involvement and prognosis than is the determination of the blood urea nitrogen alone. It has been maintained by Addis and Watanabe[16] that certain functional tests — as phenolsulphonephthalein — fail to reveal the latent deficiencies in the kidney function, whereas experimental urea may suffice to do this.

We have invariably obtained high figures for creatinin in normal persons, namely, from 3.2 to 4.82 mg. per hundred c.c. of blood. This has been a great disappointment in view of the definite normal and abnormal values and emphatic diagnostic and prognostic claims stipulated by Myers and Lough.[17]

The normal values for cryoscopy have been so variable, namely, from —0.45 to —0.51 degrees for δ and —0.59 to —1.39 degrees for Δ that we have been unable to place much reliance on the results. Therefore, compared with simpler tests, even with respect to the separately catheterized urines of each kidney, in comparison with the molecular concentration of the blood, cryoscopy of the total urine or of the blood alone is, or should be, obsolete. Factors, such as water, diet, polyuria and anemia, materially affect the cryoscopic determinations which, associated with the technical disadvantages, render the method useless.

The pathologic cases subjected to a comparative study of the various functional tests are presented in Tables 3, 4 and 5. Table 3 consists of cases of retention of urine. Of the seventeen cases studied, eleven were due to prostatic hypertrophy, three to prostatitis and seminal vesiculitis, and one each to obstructive contracture of the sphincter vesicae, stricture and carcinoma of the prostate. In all cases operation was successfully performed save in Cases 15 and 16, and organic disease contraindicated surgical intervention in these two cases. The first patient died in a few days of pyelonephritis, and the second case was so complicated by hypertension, myocarditis and dilatation that the patient died a month later. A review of this table reveals the following notable features: The onset of elimination of indigocarmin was noted in from eight to 100 minutes, while phenolsulphonephthalein appeared in the urine in from nine to ninety minutes. In five patients indigo, and in two patients phenolsulphonephthalein, did not appear for an hour or more after injection. Thus we emphasize that this period is not negligible in the quantitative estimation of either of these substances, so far as the first hour's output is concerned, and insist for the best and most reliable data relative to kidney function, that the quantity for the first hour should be timed from the moment of injection rather than from the onset of its elimination. The quantities eliminated for three hours varied from 2.53 to 34.33 per cent. for indigo and from 5.85 to 90.09 per cent. for phenolsulphonephthalein. The indexes of elimination of the two substances suggest a parallelism, but the results have not been so reliable in the case of phenolsulphonephthalein as with

13. Obtained by voluntary urination every few minutes; it undoubtedly would have appeared earlier if tested by continuous catheterization.

14. Kendall, E. C.: The Fate of Phenolsulphonephthalein when Injected into the Animal Organism, The Journal A. M. A., Feb. 3, 1917, pp. 343-345.

15. Smith, R. L. I.: Renal Function in Nephritis, The Journal A. M. A., Jan. 27, 1917, pp. 278-280.

16. Addis and Watanabe: A Method for the Measurement of the Urea Excreting Function of the Kidneys, Jour. Biol. Chem., 1916, **28**, 251.

17. Myers, V. C., and Lough, W. G.: The Creatinin of the Blood in Nephritis: Its Diagnostic Value, Arch. Int. Med., October, 1915, pp. 536-546.

indigo. The index of indigo elimination has been extraordinarily trustworthy, and as a guide to kidney efficiency and operability has proved itself *par excellence*, the best at our command. Almost exclusive reliance on the index as an indication of the stability of kidney function in cases of prostatic hypertrophy during the last three years has been rewarded with recovery in every case of prostatectomy. In Case 3, in spite of an indigo index of 0 three weeks before a minor operation, the patient recovered. It will be observed, however, that the index for phenolsulphonephthalein immediately before operation was in the positive phase and the repetition of the indigo test was thought to be unnecessary. Case 15 showed the indexes for both indigo and phenolsulphonephthalein in the negative phase. Operation was not to be considered, and the patient died in a few days. Case 16 illustrates well the fact that the renal function is not the only consideration relative to operability. The patient was the victim of marked myocarditis with dilatation and hypertension, and died a month after his examination.

The total noncoagulable nitrogen varied from 22 to 106 mg. In eleven of the thirteen successful prostatectomies shown in this table, the nonprotein nitrogen exceeded the normal values found in Table 2, and in the cases of the patients who died from a few days to a few weeks after the functional tests were performed, the values for nonprotein nitrogen were no higher than in the cases of several of the patients successfully operated on.

The findings for blood urea nitrogen ranged from 8 to 74 mg. and closely paralleled the results of noncoagulable nitrogen.

The urine urea nitrogen results varied from 20 to 360 mg. per hundred c.c. and permit of no deductions of value; indeed, in comparison with the simple Doremus method, with findings from 2 to 30 mg. per cubic centimeter, the advantage is strongly in favor of the latter, although it is universally admitted that the sodium hypobromite method is susceptible of erroneous results.

It was hoped that Ambard's constant or quotient might furnish a more reliable index of renal efficiency than either the blood or urine urea separately. Unfortunately, this has not been true. In six of thirteen patients successfully operated on, the ureosecretory index was so high that operative intervention might be said to have been contraindicated. We agree, therefore with Jonas and Austin[18] and question whether the original formula[19] or McLean's[20] modification is truly the expression of the physiologic law underlying the relation between the urea concentration of the blood and urine and the rate of urea excretion.

Our results with creatinin have varied from 2.2 to 5.5 per hundred c.c. of blood. In a number of the patients successfully operated on the findings were higher than in a few patients who died shortly after the determinations.

The cryoscopic readings varied for the blood from —0.38 to —0.57 degrees; for the urine from —0.16 to —1.45 degrees. The results were such as to stamp this method as worthless so far as the proper treatment of such cases as are shown in Table 3 is concerned.

Table 4 comprises eight cases of nephritis — two of acute parenchymatous, three of chronic parenchymatous, two of chronic interstitial and one of chronic diffuse — studied with respect to the several functional renal tests. It will be noted that in the cases of acute and chronic parenchymatous nephritis, the quantitative output of both indigo and phenolsulphonephthalein was high, and also that almost without exception the indexes of elimination were in the positive phase. Contrasted with this it will be observed that in the chronic interstitial type of the disease, although the quantity eliminated for three hours was variable, the indexes of elimination were constantly in the negative phase. The noncoagulable blood and the urea nitrogen range from 42 to 98 mg. and from 14 to 25 mg., respectively. The urine urea determinations per hundred c.c. with urease or by the Doremus method were so variable as to be valueless. However, it is significant to note that the Ambard quotient in the cases of parenchymatous nephritis was uniformly high, above the normal, while in the cases of chronic interstitial and diffuse nephritis it was constantly low, below the normal. Apparently, this method may be utilized for the differentiation of parenchymatous and interstitial nephritis, and would seem to be more valuable in this respect than the determination of blood urea nitrogen or total nonprotein nitrogen alone, although as a matter of fact it furnishes no more information than is supplied by the index of elimination of indigocarmin or possibly phenolsulphonephthalein.

The values for creatinin vary from 3.21 to 5.4 mg., and are uniformly high. Improvement has occurred, since the determinations, in the general health of all patients, excepting Patient 4, who died recently.

The results of cryoscopy both of the blood and of the urine present nothing noteworthy, and may be disregarded in a study of nephritides.

In Table 5 we present eighteen pathologic cases, mostly prostatics studied only with indigocarmin and phenolsulphonephthalein, and although the findings demonstrate nothing not already shown in the previous tables, we believe the results to be of sufficient interest to warrant consideration, in view of the popular but unfounded preference for phenolsulphonephthalein as a functional kidney test. It will be observed that the parallelism existing between the results of the two substances is most striking, particularly with respect to the indexes of elimination. Discrepancies exist in only four instances, namely, Cases 3, 8, 11 and 15, and in the last the negative index for indigo was known to be due to improper collection of the hourly specimens of urine. For similar reasons, fallacious indexes for both indigo and phenolsulphonephthalein were obtained in Cases 12 and 17. In Case 3, the failure of phenolsulphonephthalein to appear for two hours after injection is inexplicable, unless the recent experimental work of Kendall is substantiated. In Cases 8 and 11 the disagreement between the indexes for indigo and phenolsulphonephthalein on the one hand, and the clinical conditions and subsequent states of the patients, on the other hand, furnishes further support to the belief that phenolsulphonephthalein does not lend itself so well as indigo to this method of determination. Finally, attention is called to Cases 6 and 11 in support of former assertions to the effect that the index of elimi-

18. Jonas and Austin: The Value of the Ambard Quotient in the Estimation of Renal Function, Am. Jour. Med. Sc., October, 1916, p. 560.

19. Ambard and Weill: Les lois numériques de la secretion rénale de l'urée et du chlorure de sodium, Jour. de physiol. et de path. gén., 1912, **14**, 753.

20. McLean: The Numerical Laws Governing the Rate of Excretion of Urea and Chlorides in Man, Jour. Exper. Med., 1915, **22**, 212.

nation of indigocarmin is a truer gage of renal function of a person than is merely the quantitative output for two hours, particularly if this hourly estimation ignores the period from the time of injection until the substance appears in the urine. In Cases 9 and 10, in which death followed prostatectomy, it is worthy of note that the indexes for both indigo and phenolsulphonephthalein were in the negative phase and contraindicated operation, in spite of the relative satisfactory quantitative outputs for the respective substances.

CONCLUSIONS

1. The analysis of the results of the several functional kidney tests employed in this study emphasizes our belief that of those utilized none possessed virtues superior to indigocarmin, not excepting the tests of retention.

2. Indigocarmin, in our experience, has been more trustworthy and practical than phenolsulphonephthalein.

3. In cases which may require an additional functional test for confirmatory judgment, phenolsulphonephthalein, total nonprotein nitrogen or urea nitrogen of the blood may be utilized.

4. Ambard's quotient was of questionable utility so far as the differentiation of nephritis is concerned, and possessed no actual advantage over indigo or phenolsulphonephthalein.

5. Cryoscopy of the whole blood and urine is valueless. If unilateral values are desired, ureteral catheterization is necessary and may be obviated by recourse to more modern and practical tests.

6. Creatinin of the blood and urine urea nitrogen either per hundred c.c. by the urease or by Doremus' sodium hypobromite method demonstrate results so variable as to be unreliable.

7. Irrespective of the finer medical aspects of renal function, the differentiation of glomerular and tubular nephritis, the detection of renal disease in its incipiency, etc., the best functional kidney test today is indigocarmin, at least for the surgeon, because it is not only the most practical test, but it is unsurpassed in reliability, whether employed for unilateral determination by the method of chromo-ureteroscopy or for total function through reliance chiefly on the index of elimination.[21]

116 South Nineteenth Street.

21. The remaining article of this symposium, by Drs. Krotoszyner and Stevens, and the discussion will appear next week.

Occupational Training for the War Cripple.—It is the general consensus of experience that the decision by the man to undertake a course of training must be a voluntary one. Of course, he may be retained in the military organization and detailed to trade classes in the same way as he is detailed to guard duty, but this would not make for successful results. The unwilling and rebellious pupil learns but little, the earnest and ambitious one makes rapid progress. The man must be persuaded, therefore, to take up instruction; the future advantages of being a trained workman in some skilled trade should be pointed out, and the practical arrangements to be made for him during the course of instruction carefully explained. There is no royal road to success in this effort, but after gaining the soldiers's friendship and confidence, a patient persistence will win the battle. If a competent visitor has been in touch with the man's family during his absence at the front, the members of the home circle can be easily convinced of the wisdom of his reeducation; this will make all the simpler persuasion of the man himself.—Douglas C. McMurtrie: The War Cripple, Columbia War Papers.

RECURRENCE AFTER OPERATIONS ON THE BILIARY PASSAGES *

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One of the reasons for the rapid growth of many a modern commercial enterprise is the exchange of experience at frequent cabinet meetings of the heads of departments, as to the cause for success or failure in their respective spheres of activity. We can profit by following such a method because the time has arrived when a discussion of the reasons why a certain percentage of our operations on the biliary passages is not successful is necessary. It is to this group of recurrence cases that we must devote our investigative energy in order to lessen their number. Statistics are of little value as to the percentages of satisfactory and unsatisfactory results unless practically all of the patients operated on have been actually examined at intervals for a number of years by the surgeon himself, and this is rarely possible. Recurrences may take place, as I shall presently show, many years after the original operation, and the patient may have been operated on by another surgeon long after the first operator considered the case as cured. A far more valuable contribution, it appears to me, would be for each one of us to report in the future, as Deaver[1] has recently done, the recurrence cases in which we have either actually operated or otherwise diagnosed. In this way the cases in which we have operated primarily can be studied, and a profitable discussion will result as to the causes of our failures.

My object is to follow out such a plan, and after a review of our present knowledge of the varieties of recurrences, to report a series of personal observations and suggestions as to their possible avoidance in the future.

DIVISION OF RECURRENCES

The most convenient classification of recurrences is into true and false. By true recurrences, we mean that an actual reformation of calculi has taken place as the result of the persistence or the recrudescence of a former infection.

TRUE RECURRENCES

In the early history of gallbladder surgery, reformation of calculi around foreign bodies like silk sutures was observed. Floercken[2] has collected eight instances of this form of true recurrence, but at the present time this need not be considered.

The question as to whether calculi can reform in the gallbladder has been greatly cleared up by the work of Aschoff and Bacmeister[3] which has been confirmed by Ehrhardt.[4] They found that the so-called glands of Luschka are in reality clefts in the wall of the gallbladder lined by epithelium. In the normal viscus they do not penetrate beyond the muscular coat; but in pathologic gallbladders they are found to extend to the serous coat, are greatly dilated, are filled with the products of inflammation, and are the cause of reinfection after cholecystostomy. At times, cholesterin calculi in the process of formation have been

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Deaver: Illinois Med. Jour., June, 1916.
2. Floercken: Deutsch. Ztschr. f. Chir., 1908, **93**, 110.
3. Aschoff and Bacmeister: Die Cholelithiasis, Jena, 1909, and also numerous references in Riese's article in Ergebnisse zur Chirurgie und Orthopedie, 1913, **7**.
4. Ehrhardt: Arch. f. klin. Chir., 1907, **83**, 118.

found in these crypts or glands of Luschka (Fig. 1), and thus one can readily explain the reformation of calculi after cholecystostomy by the extrusion of these minute calculi into the lumen of the gallbladder, thus serving as a nucleus for the formation of larger calculi.

Whether or not true reformation of calculi takes place in the common or hepatic ducts is at present an open question. The subject of intrahepatic cholelithiasis is a comparatively new one. Although Cruvelhier[5] in his atlas has an excellent illustration of this condition, the subject did not attract much attention until the appearance of the article by Beer,[6] who found it in six of seventy-two cholelithiasis cases (8.3 per cent.) at necropsy. In five of these, there were also common duct stones present, and in one they were present, in addition, in the gallbladder. Courvoisier[7] in 1890 had collected fifty instances, and Körte,[8] in 1889, said it might play an important part in prognosis after gallbladder operations. Lewisohn,[9] Jenckel,[10] Riese,[11] Quénu,[12] Deaver,[12] Kehr,[13] and I[14] have since observed the condition clinically. In one of my own cases this intrahepatic cholelithiasis was undoubtedly the cause of a recurrence (Fig. 4 of former article).

Taking all of these observations into consideration, we are justified in saying that a true reformation of calculi can occur in the gallbladder; a number of apparently authentic cases of this kind have been reported by Stanton[15] and others. In regard to the true reformation of calculi in the common or hepatic ducts after removal of the gallbladder, there is much doubt. Cases in which calculi are found in these ducts at secondary operations even after previous drainage and removal of calculi[16] are in all probability due to the descent of calculi from the intrahepatic bile passages, a fact which must be borne in mind in our prognosis of common or hepatic duct cases even when no calculi were found at the first operation.

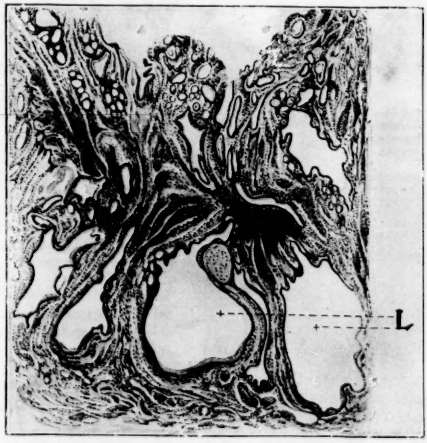

Fig. 1.—Section of gallbladder wall in case of chronic cholecystitis showing dilated crypts of Luschka (*L*) (Aschoff) which are the source of reinfection.

5. Cruvelhier: Reproduced in Moynihan's Book on Gallstones, 1904.
6. Beer: Arch. f. klin. Chir., 1904, **74**, 115.
7. Courvoisier: Beitr. z. Chir. d. Gallenwege, 1890.
8. Körte: Zentralbl. f. Chir., 1889, **15**.
9. Lewisohn: Ann. Surg., 1916, **63**, 535.
10. Jenckel: Deutsch. Ztschr. f. Chir., 1910, **104**.
11. Riese: Verhandl. d. Freien Verein. d. Chir., Berlin, 1904.
12. Quénu and Deaver: Rev. de chir., 1914, **49**, 105.
13. Kehr: Neue Deutsch. Chir., 1913, **8**.
14. Eisendrath, D. N.: Overlooked Common Duct Stones, THE JOURNAL A. M. A., March 31, 1917, p. 968.
15. Stanton (Ann. Surg., 1915, **61**, 226) reports one case of his own and has collected all of the published instances except those of Deaver (Surg., Gynec. and Obst., 1913, **17**, 667), who removed 100 calculi from the gallbladder and two years later 200 more. Kehr has seen true reformation only three times in 2,000 operations. Under recurrence cases, I report several examples of apparently true reformations.
16. One can easily overlook common duct calculi at the first operation, especially if any small calculi were present. The escape of these through the T-tube is one of the great advantages of common duct drainage.

FALSE RECURRENCES

Under false recurrences I include: (1) overlooked calculi; (2) adhesions; (3) chronic pancreatitis; (4) persistence or recurrence of original infection; (5) strictures; (6) fistulas (internal or external); (7) faulty technic, for example, suturing gallbladder to the abdominal wall or insufficient removal of cystic duct, permitting the formation of a dilated stump,[17] with possible true reformation of a calculus in same; (8) incorrect diagnosis, for example, tabes and spinal tumors; (9) coexistence of two conditions, for example, ureteral calculus (see my own recurrence cases); (10) contraction of the ampulla of Vater, and (11) cancer of head of pancreas.

Persistence of infection, overlooked calculi and chronic pancreatitis constitute the majority of all causes of recurrence in my own experience, as well as in that of others who have written on this subject. Time will not permit of detailed consideration, but I have been more and more impressed with the fact, as my experience increases, that no surgeon who does not possess a thorough knowledge of the pathology of infection in the biliary tract can hope to progress in this field. The period has passed during which a surgeon who possesses only sufficient technical knowledge to drain or even to remove a gallbladder should operate in these cases.

PERSISTENCE OR RECURRENCES OF INFECTION

The fact that the calculi[18] are the result and not the cause of the infection is not so generally understood as it deserves to be. It is beyond the province of this paper to discuss the indications for cholecystectomy, but microscopic examination of the gallbladder after removal, in cases of persistence or recurrence of infection, clearly demonstrates the fact that every attack causes serious changes in the normal contractility and elasticity of the gallbladder which favor stagnation and provide ideal conditions for reinfection. The studies of Aschoff and others on thousands of gallbladders removed at operations clearly demonstrated the fact that the recurrence of persistence symptoms

17. Floercken (Deutsch. Ztschr. f. Chir., 1912, **113**, 604) found a dilatation of the cystic duct the size of a plum three years after cholecystectomy, and a brown calculus embedded in the wall of the dilatation and none elsewhere. In one of my cases (Case 657 of recurrences) two years after operation the cystic duct formed a pseudogallbladder 1 inch long, the size of an almond, containing a calculus the size of a millet seed (Fig. 2). Von Haberer and Clairmont (Arch. f. klin. Chir., 1904, **73**, 697) confirmed the work of deVoogt (Nederl. Tijdschr. v. Geneesk., 1898, **43**, 236), and Oddi (Centralbl. f. Chir., 1889, No. 8) found that a dilatation of the cystic duct stump followed removal of the gallbladder in dogs (Fig. 2).
18. Naunyn was of the opinion that stagnation alone sufficed to explain the origin of gallstones, but Aschoff and every one else who has investigated the subject believes that infection is essential. Aschoff believes that aseptic cholesterin calculi may be present in the gallbladder for a long time, but that as soon as infection supervenes, the so-called secondary calculi are formed.

is due to the retention of infected secretion in the crypts of Luschka (Fig. 1), or even reformation of cholesterin calculi in them. Again, in many cases it is impossible to remove all of the crystalline detritus which we so often find on opening the gallbladder,[19] and if infection persists it is easy to see how recurrences can take place.

The question of recurrence of infection symptoms after common duct operations, even without the presence of calculi, is one that deserves further study in the near future, and must be borne in mind when one is making a prognosis after common duct operations.

OVERLOOKED CALCULI

Any one familiar with anatomy can readily understand how it is possible to overlook small calculi which lie beneath a fold of mucous membrane at the neck of the gallbladder or within one of the pocket-like tortuosities of the cystic duct (Fig. 2). I have frequently found such calculi in the examination of the specimen (after removal of the gallbladder and cystic duct) which I feel confident would have been overlooked.

The presence of many small calculi in the gallbladder, associated as it has been so frequently in my own experience with calculi in the common duct, seems to me to be an indication for cholecystectomy with removal of the entire cystic duct, which we must add to our other indications for this operation.

In a previous communication,[14] the subject of overlooked common duct calculi was discussed. Further experience has strengthened the opinions expressed in that article.

During the past five years, in the course of a large number of operations on the biliary passages, I have explored the common and hepatic ducts in thirty-four cases in which palpation was negative. In eleven of these (32.3 per cent.) calculi were found on exploration in spite of negative palpation.[20]

The chief indication for opening the common duct in eight cases in spite of negative palpation was the presence of many small calculi in the gallbladder. In all of the eight cases of positive exploration after negative palpation the number of calculi in the gallbladder varied from twenty to three hundred.

In three cases the common duct calculi were the size of a pea, faceted, and fifteen in number. In the majority of the eleven cases the calculi were found in the supra-ampullary portion of the common duct, which is so difficult to palpate through the duodenum. In two cases a number of small calculi of the same size and composition as those in the gallbladder and common duct were either found in the hepatic duct or escaped in a perfect shower from this duct while the edges of the opening in the common duct were retracted. In one of these patients there has been a recurrence of symptoms in spite of a cholecystectomy and choledochostomy with removal of calculi from the common duct. In one case symptoms of cholangeitis recurred three years later, and death was due to this cause.

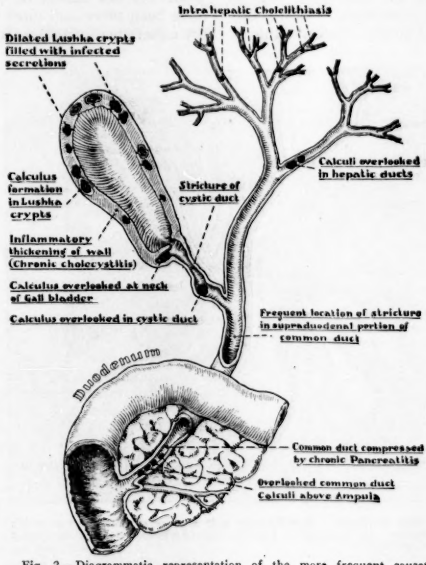
Intrahepatic Cholelithiasis
Dilated Luschka crypts filled with infected secretions
Calculi overlooked in hepatic ducts
Calculus formation in Luschka crypts
Stricture of cystic duct
Inflammatory thickening of wall (Chronic cholecystitis)
Calculus overlooked at neck of Gall bladder
Calculus overlooked in cystic duct
Frequent location of stricture in supraduodenal portion of common duct
Duodenum
Common duct compressed by chronic Pancreatitis
Overlooked common duct Calculi above Ampulla

Fig. 2.—Diagrammatic representation of the more frequent causes of recurrence after operations on the biliary tract.

The indications for opening the common duct were the same[21] as those first emphasized by Kehr[22] to which I have added the recurrence of symptoms of cholangeitis after previous operations on the gallbladder or common duct.

That common duct and hepatic calculi are so frequently overlooked is due to several causes. First, choledochostomy is considered to be a far more difficult operation and accompanied by a much higher mortality than it deserves to be, and this deters many competent surgeons from doing as thorough an operation as they ought to do. Second, we are accustomed to be content with palpation of the supraduodenal portion of the common duct, and unless this is positive or there are definite obstruction symptoms, one is apt to omit further operative interference. Third, recent articles[23] and my own experience reveal the fact that we must change our views in regard to the symptomatology of common duct calculi. There is a group of cases which I have termed the silent common duct calculi which show none of the symptoms hitherto thought characteristic of calculi in this location. In nine of my own cases in which no previous operations had been performed the principal symptoms were: 1. Pain, for months to years not to be distinguished from that due to the gallbladder. 2. Icterus, slight and

19. The same thing holds true for the common duct, and some of the cases of recurrence after drainage and removal of calculi are accompanied by the constant discharge of such crystalline débris from the T-tube. One can readily see how a recurrence of symptoms can occur if sufficient of this material collects in the common duct. A study of 276 common duct cases by Brüning demonstrates that one can have symptoms of severe cholangeitis without the presence of calculi, and that these may persist after drainage of the common duct.

20. I may be criticized for being unable to palpate calculi in the common duct; but when one considers that the greater portion of the duct must be palpated through the entire thickness of the duodenum and that the majority of the calculi were not larger than a pea and were embedded in thick bile, as a rule, I can readily see why they have escaped detection by others as well as myself in the past. Kehr (Arch. f. klin. Chir., 1912, **97**, 301), in 46 per cent. of thirty-six cases in which palpation of the common duct was negative, found calculi either in the hepatic ducts or the retroduodenal portion of the common duct.

21. These indications are: (*a*) presence of many small calculi in the gallbladder or cystic duct; (*b*) chronic pancreatis (*cX*) thick walled, dilated common duct, and (*d*) when patients whose gallbladders have been previously removed are reoperated on, if the common duct is dilated or thick walled, and there have been symptoms of cholangeitis (icterus, chills, etc.).

22. Kehr: Arch. f. klin. Chir., 1912, **97**, 301.

23. Kehr: Neue deutsch. Chir., 1913, **8**. Moynihan: Gallstones, 1904. Brüning: Deutsch. med. Wchnschr., 1912, No. 33.

only during attacks of pain in three cases. In two cases there had been distinct icterus during the attack. In the remaining four cases there was no icterus at any time. 3. Chills and fever, present in only two cases of the nine. 4. Variation of the common duct in size from a little finger to a thumb. 5. Hardness and enlargement of the pancreas in only three of the eleven cases.

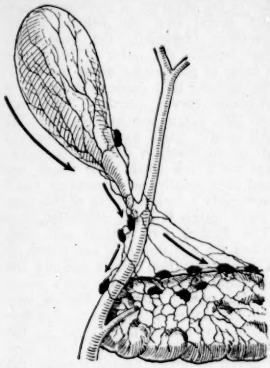

Fig. 3.—Relation of lymphatics of biliary tract to those of pancreas. Arrows indicate direction of flow of lymph from gallbladder and common duct to lymphatics of pancreas. Note relay lymph nodes at neck of gallbladder, along common duct and upper border of pancreas. (After Franke.)

As our knowledge of intrahepatic cholelithiasis increases, we are better able to understand why recurrences take place even after drainage of the common duct and removal of calculi. In one of my cases, calculi similar to those of the first operation were found at the second opening of the common duct, and this has been the experience of Deaver, Mixter and others.

When one has reason to suspect the presence of many calculi within the liver, prolonged drainage is our only method at the present time in order to lessen the chances of recurrence.

PANCREATITIS

Whether or not infection of the pancreas occurs as does that of the gallbladder in many instances by the hematogenous route is still under investigation. The close relation of the lymphatics (Fig. 3) of the biliary tract to those of the pancreas readily explains its involvement. The more chronic indurative forms of pancreatitis with resultant compression[24] of the common duct plays an important part in favoring stagnation of the secretory current in the bile ducts. In Deaver's series[12] of forty-two recurrences in 1,031 operations, chronic pancreatitis was the cause in five, a little over 10 per cent.

ADHESIONS, STRICTURES AND FISTULAS

"Adhesions" is often a diagnosis under which sins of omission are hidden, and should not be made until a thorough roentgenographic examination has been made. There are as a rule fewer adhesions after cholecystectomy, but even here one is often surprised to find a broad surface of the duodenum adherent to the carefully sutured gallbladder bed.

The longer a calculus lies impacted in the neck of the gallbladder or cystic, hepatic or common ducts, the greater is the danger of ulceration, with subsequent formation of a stricture. This is a strong argument for early and radical operation if the patient is not too septic. Fistula formation after operation is a rarity, since removal of the gallbladder is being employed as a routine measure by the majority of operators.

FAULTY TECHNIC

If only drainage of the gallbladder is performed, the method of anchoring the fundus to the parietal peritoneum should be discarded. It leaves a long tube fixed at both ends whose muscular contractions are greatly interfered with. Dropping the gallbladder back after insertion of a tube into its fundus is the most rational procedure.

The increasing frequency with which we find a dilated stump (Fig. 4) of the cystic duct; often containing one or more overlooked calculi, is the strongest plea for removal of the entire cystic duct close to the common duct,[25] during cholecystectomy.

INCORRECT DIAGNOSES AND COINCIDENCE OF TWO CONDITIONS

Coincident with the perfection of our methods of diagnosis, we find that many patients primarily operated on under the diagnosis of cholecystitis are in reality suffering from spinal lesions with referred pain, or tabetics whose visceral crises were interpreted as being genuine gallbladder attacks.

I have recently observed a patient with a gangrenous cholecystitis with many calculi who returned one year after a cholecystectomy with severe right upper quadrant pain which roentgenographic examination revealed to be a right ureteral calculus close to the kidney as the cause of the recurrence.

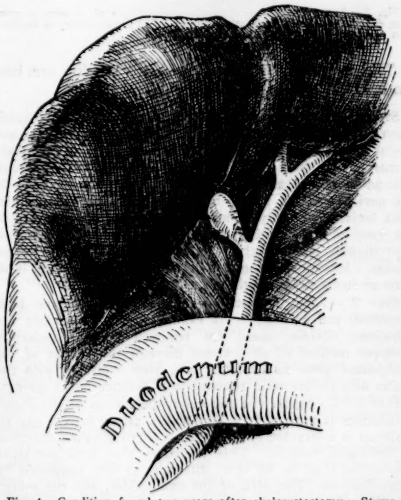

Fig. 4.—Condition found two years after cholecystectomy. Stump of cystic duct dilated to form new gallbladder. Latter contained small calculus.

TECHNIC OF CHOLEDOCHOSTOMY

I believe that drainage of the common duct has every advantage over primary suture as advocated by Crile.[26] He compares the common duct to a rubber

24. I have operated in cases resembling in every respect obstruction of the common duct by calculi, which were due to compression of the intrapancreatic portion of the duct by a chronically indurated pancreas.

25. Under technic I refer to the anomalies of the mode of union of the cystic and hepatic ducts which must be borne in mind.

26. Crile, G. W.: Drainage Versus Immediate Suture of the Common Duct, THE JOURNAL A. M. A., May 2, 1914, p. 1373.

tube with both ends patent, but he does not take into consideration the inflammatory swelling of the pancreas which invariably accompanies common duct infection and thus obstructs the exit of the infected bile through the ampulla.

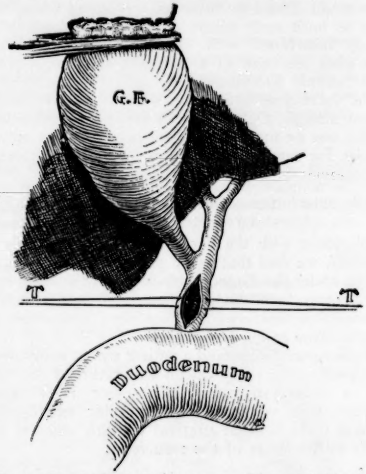

Fig. 5.—Supraduodenal choledochostomy. Edges of incision in common duct pulled apart by traction sutures (*T, T*) preliminary to exploration of common and hepatic ducts.

The steps of the technic which I employ are best understood by a study of Figures 5, 6 and 7.

STEP 1.—The incision to expose the gallbladder extends from the angle formed by the ensiform process and costal arch downward through the inner third of the right rectus muscle to a little above the level of the umbilicus. The patient's lumbar region has been previously elevated by the device attached to the operating tables in common use. This incision not only permits the most perfect exposure of the common and hepatic ducts as well as the gallbladder, but also enables one directly to inspect the stomach and duodenum. It is surprising how close to the abdominal wall such an incision brings the principal bile passages.

STEP 2.—After the stomach and duodenum have been inspected, the gallbladder is examined; and if calculi are contained therein, these are removed by the generally accepted method of an incision through the fundus of the gallbladder after its contents have been aspirated with the trocar and rubber tube attached to a 3-ounce metal syringe.

STEP 3.—To expose the bile ducts, the fundus of the empty gallbladder is grasped by a long-bladed artery forceps and an assistant is instructed to make gentle traction in the direction of the right shoulder. This procedure also pulls the right lobe of the liver in the same direction, as first suggested by Mayo-Robson. The neck of the gallbladder, and the cystic, hepatic and common ducts are now exposed. If these structures are enveloped in adhesions, the exposure obtained enables one to separate and ligate the adhesions and to cover with suture raw surfaces by sight and not by touch. A very important detail in securing a good view of the common duct is to have the proper retraction not only of the gallbladder and right lobe of the liver, but also of the stomach, transverse colon and of the omentum, toward the left and in a downward direction. Such retraction is best secured (*a*) by the use of the Deaver and Kelly retractors, (*b*) by not packing too much gauze into the abdomen, and (*c*) by instructing the assistants (preferably only two being employed) only to keep up firm retraction and not to relax their grasp from time to time, thus permitting the viscera mentioned to drop into the field and cover the common duct.

STEP 4.—In the surgery of the common and the hepatic ducts I prefer to employ instruments and suture material as fine as those used for eye operations in opening the common duct. The hepatoduodenal ligament is first identified as marking the right border of the envelope of peritoneum covering the common duct, portal vein and hepatic artery. Retraction of the structures (especially the duodenum) around the common duct permits the latter to be readily seen, covered by a thin layer of peritoneum which is divided by fine scissors, and the opening thus made is widened by spreading it with blunt-bladed curved scissors. Two traction sutures of very fine (00) catgut are inserted (Fig. 5) with an extremely small needle (such as is used for eye work) through the wall of the common duct in its supraduodenal portion. There are a few small veins which run parallel to the duct, and occasionally an anomalous small artery which passes transversely across the front of the duct. Bleeding from both of these vessels is easily controlled by a transfixion ligature. The duct is now incised with fine, preferably angular, scissors for a distance of one-fourth to one-half inch. It is a wise precaution before opening the common duct to place a gauze sponge into Morison's pouch over the right kidney. The opened common duct is now examined with a common duct spoon in an upward direction into the hepatic ducts and then downward as far as the ampulla until one feels certain that no calculi have been overlooked. A flexible probe is finally passed through the papilla in order to be sure that the lower end of the common duct is not obstructed.

STEP 5.—In drainage of the common duct I prefer the T-shaped rubber tube first used by Kehr, which is now employed in this country by Deaver and others, including myself. The opening in the common duct is closed around this tube with the same size chromic catgut (Fig. 7) which was employed in the traction sutures described in Step 4. The tube itself (whose horizontal limbs should project only about one-fourth inch beyond the vertical portion) is held in place with a plain catgut suture.

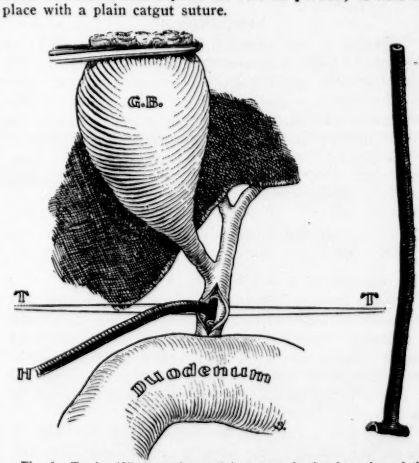

Fig. 6.—T-tube (*H*) being inserted into supraduodenal portion of the common duct through incision shown in Figure 5. The edges of the incision are pulled apart by traction sutures (*T, T*). Note on the right of picture how horizontal limbs of T-tube are only one-fourth inch long and how half of circumference of horizontal limb has been removed.

STEP 6.—I prefer to do the cholecystectomy if one has decided that the pathologic changes in the gallbladder demand its removal, after the common duct exploration and drainage, because the gallbladder is a very convenient tractor for

the common duct. Kehr reverses the steps by first removing the gallbladder and cystic duct close to the common duct, and then enlarging the cut end of the stump of the cystic duct so as to make an opening in the common duct large enough to explore both the latter and the hepatic duct, introducing his T-tube through the same opening.

The technic of cholecystectomy requires no special description. I first carefully separate the neck of the gallbladder and cystic duct from the common duct before ligating the cystic artery, which runs as a rule along the upper border of the cystic duct. The latter should be ligated as close (Fig. 8) as possible to the common duct in order to avoid the formation of a gallbladder in the dilated stump of the cystic duct. The careful separation just mentioned enables one to avoid injury of the common duct if, as frequently occurs, the diverticular-like enlargement at the neck of the gallbladder is adherent to the common duct, or if any of the anomalies in the course of the bile ducts described in another article[27] are present.

A small rubber tube is sutured with plain catgut down to the ligated stump of the cystic duct to take care of a possible leakage. Three strips of gauze 2 inches wide are placed around the common duct T-tube, one of these strips being placed well down into Morison's pouch over the right kidney.

The gauze strips are pulled out at the end of eight days, and a single narrow one put in their place. The T-tube is allowed to remain from fourteen to twenty-one days,[28] and can be easily removed at that time; it will do no harm if it remains even longer. In nearly forty choledochostomies I have never encountered a case in which the tube could not be removed by employing gentle traction, and have never seen a common duct fistula follow its employment. I usually clamp the tube at the end of five or six days if too much bile is escaping into the dressing.

SECONDARY OPERATIONS BY THE AUTHOR FOR CASES OF RECURRENCE

1. *Persistence of Infection After Cholecystostomy.*—CASE 1 (766).—Cholecystostomy for cholecystitis without calculi had been performed by another surgeon. There was recurrence of acute symptoms fourteen months later. A much thickened gallbladder was found anchored to the abdominal wall. Cholecystectomy was followed by complete cessation of symptoms.

CASE 2 (1448).—Drainage and removal of a large calculus had been performed in 1910. There was persistence of pain, and then hyperacute symptoms of sepsis in 1916. Removal of thick walled gallbladder and drainage of common duct containing only tarry bile was of no avail. A toxic condition due to persistence of intrahepatic infection (cholangeitis) existed many years, with resultant hepatic insufficiency, and was the direct cause of death.

CASE 3 (1431).—Cholecystostomy for cholecystitis without calculi had been performed by another surgeon in 1908. There were no symptoms until 1915, when a typical acute attack occurred. There was a very thick gallbladder with an area of gangrene at the neck, where a large calculus was impacted. Removal of the gallbladder was followed by absence of further symptoms.

CASE 4 (314).—Two oval calculi, each 1 inch long, had been removed, and the gallbladder drained after suturing it to the abdominal wall, by another surgeon in 1896. There were no symptoms until 1908, when a sudden onset of severe pain occurred over the former incision. A secondary cholecystostomy was performed, with removal of two stones the size of marbles from a very rigid gallbladder. This is probably a true recurrence.

2. *Biliary Fistulas Due to Obstruction of Neck of Gallbladder.*—CASE 5 (323).—There had been hydrops of the gallbladder with a large stone at the neck. Drainage and removal of the calculus had been done by another surgeon. Ulceration at the neck, where the stone had lodged, was noted at this first operation in June, 1915. A secondary cholecystectomy for persistent biliary fistula was performed. The fistula was due to a stricture at the neck of the gallbladder. Complete recovery followed.

CASE 6 (618).—Cholecystostomy for cholelithiasis had been performed in 1906. A biliary fistula persisted until 1910. I performed a secondary cholecystectomy for very thick walled gallbladder with stone impacted in the cystic duct. There were no recurrence symptoms after the second operation.

3. *Persistence of Infection After Cholecystectomy and Drainage of Common Duct.*—CASE 7 (895).—The first operation had been performed in 1912. This consisted of a cholecystectomy for a much thickened gallbladder containing many small calculi and showing acute supervening or chronic changes. The common and hepatic ducts were negative to palpation, but were opened because they were greatly dilated, and because of many small calculi being found in the gallbladder. Nine calculi ranging in size from a pinhead to a pea were found in the common duct, and a small number of similar ones were found in the hepatic duct. T-tube drainage of the common duct was done for four weeks. There was recurrence of symptoms one year later in the form of severe colicky pains and jaundice.

Fig. 7.—Appearance at completion of operation. Note liver bed from which gallbladder (*G. B.*) has been removed: also observe how close cystic duct (*S*) is ligated to common duct; and also T-tube (*H*) inserted into common duct.

The second operation was performed in 1915. Icterus and sepsis were the principal symptoms. The common duct was the size of two adult thumbs and was negative to palpation, but it contained a large amount of sandy detritus and small pigment calculi, as found in the previous condition. Septic symptoms were not relieved by drainage of the common duct, and the patient died a week later of septic pulmonary and enteric complications.

CASE 8 (280).—There was a history of many years of recurrent attacks of pain and icterus. The first operation was performed in January, 1916. A thick walled gallbladder contained hundreds of small calculi and was removed. The common duct was negative to palpation, but fifteen calculi of the same size as those in the gallbladder were found lying in thick tarry bile just above the ampulla. There was no recurrence of symptoms for nine months, then severe pain and slight icterus appeared and have continued at intervals. Secondary operation was refused.

4. *Overlooked Common Duct Stones.*—CASE 9 (657).—Cholecystectomy by another surgeon had been performed in 1910 for a small hard gallbladder containing two large calculi. Fragments of calculi and sandy detritus were found in the cystic duct. There was recurrence of pain and icterus

27. Surgical Clinics of Chicago, August, 1917. The cystic duct, instead of emptying into the hepatic duct at an acute angle, may (a) run parallel to it for a variable distance, (b) wind around it, or (c) may empty into its posterior wall.

28. Deaver strongly advocates prolonged drainage. He has left the T-tube in one patient for over three years.

two years later. At a second operation in 1912 the cystic duct was found dilated, forming a pseudogallbladder 1 inch long containing a calculus the size of a millet seed. The common duct was much dilated and negative to palpation, but two bean-sized calculi were found. The pancreas was very hard and lobulated. There were no further symptoms.

CASE 10 (1426).—Cholecystostomy and negative exploration for calculi in the gallbladder had been performed by another surgeon in 1913. There was recurrence of symptoms eighteen months later (pain and icterus). At a secondary operation a much thickened but empty gallbladder was removed. The common duct was negative to palpation, but a stone the size of a navy bean was found. The pancreas was soft. There was no further recurrence.

CASE 11 (1454).—The first operation by another surgeon had been performed in June, 1916. This was a cholecystostomy with removal of a large number of small calculi. The second operation was in December, 1916, a cholecystectomy by the same surgeon for biliary fistula due to overlooked stone in the cystic duct. There was recurrence of symptoms four weeks later (fever, icterus, pain). At the third operation in January, 1917, all the bile ducts were found much thickened and dilated. One calculus the size of a bean was firmly impacted in the papilla of Vater, and there were two smaller ones proximal to it. There was no recurrence of symptoms.

5. *Recurrence Due to Common Duct Injury During Cholecystectomy.*—CASE 12 (1219).—Cholecystectomy had been performed after the removal of two calculi the size of marbles from a gallbladder showing many abscesses in its wall. Accessory cystic artery crossing behind the hepatic duct was overlooked with resulting severe bleeding and some narrowing of the hepatic duct during ligation of the vessel. The operation was followed by severe chills, fever and icterus. At a second operation, four weeks later, several small abscesses were found in the liver. The patient recovered from all cholangeitis symptoms except icterus, which has persisted. In this case the septic condition of the gallbladder favored liver infection after the hepatic duct had been narrowed.

6. *Recurrence After Cholecystectomy Due to Extrabiliary Causes.*—CASE 13 (1303).—Cholecystectomy had been performed for grangrenous cholecystitis with many calculi in the gallbladder. The patient returned ten months later with severe colicky pain in the right upper quadrant, which was found to be due to a calculus impacted in the upper portion of the right ureter.

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ABSTRACT OF DISCUSSION

DR. W. WAYNE BABCOCK, Philadelphia: I would emphasize the value of cooperation between surgeons. Much good would be accomplished by observance of a rule that every surgeon should report back to the original operator the results he finds when the patient comes for a secondary operation. We know some of the bad results when our patients return to us. We know perhaps more of results of other surgeons, because the tendency is for our patients to go to others and the patients of others to come to us. If, therefore, we might have a surgical clearing house, or some method by which we could compare results, it certainly would be of special value in a subject so important as this.

There is no pathologic condition in the abdomen which is permitted to continue as many years without treatment as gallbladder disease. In the first stage of gallbladder disease, that before the formation of stones, there is one operation to be performed — cholecystectomy. From a study of Dr. Eisendrath's cases and those of others it will be found that there are then practically no recurrences. The second stage, in which stones have formed in the gallbladder, likewise is to be treated, for the most part, by cholecystectomy. In the first stage our mortality should be under 1 per cent.; in the second stage, not over 3 to 5 per cent. in the best hands. In the third stage, that of terminal complications, conditions are different; patients are older; there has been an interval of from twenty to thirty years from the inception of the cholecystitis to the operating table and the mortality exceeds 15 per cent. In this stage cholecystostomy, cholecystectomy and, especially, anastomotic operations must be considered.

DR. JOHN B. DEAVER, Philadelphia: Dr. Eisendrath has called attention to a valid cause for the reformation of stones after a cholecystostomy by the persistence or recrudescence of infection lodged in the minute glands of Luschka. All of the eleven recurrent cases (in about 200 gallstone operations) in my experience at the German Hospital, Philadelphia, during 1916 and up to the present took place after a primary cholecystostomy. Gallstones had reformed in the gallbladder in two of the cases, and in one case stone was found in the common duct; in another case, in addition to stone in the gallbladder, sandy bile was found in the hepatic duct, where it had caused occlusion of the lower part of that duct. This patient had undergone a cholecystostomy four years previously at another hospital and a choledochostomy had been performed by me two years prior to this meeting. The recurrence of symptoms in the other case was due either to adhesions or to dilatation of the common duct (one case).

Dr. Eisendrath referred to two cases in which incision of the common duct, with retraction of the edges of the wound in the duct, was followed by the escape of a shower of small stones from the common duct. I have seen this in numerous cases of cholangeitis, pancreatic lymphangitis and chronic pancreatitis the result of long-standing gallstone disease. The establishment of permanent drainage in these cases has proved of marked benefit.

Pancreatic or peripancreatic lymphangitis I believe to be an important factor in causing the reappearance of symptoms in these gallstone cases.

The anatomic relationship between the lymphatics of the gallbladder and those of the pancreas, as has been shown by injection of the former through the latter, and the chain of lymph glands to the number of five or six along the cystic and the common ducts, easily explain how an infected gallbladder can play havoc with the pancreas, one of the most important organs in the body, not only because of its digestive function, but also because of its influence on the functions of other glands with an internal secretion. It is therefore of the utmost importance for the medical man not to dilly-dally with cases presenting symptoms of biliary infections, but to send them early for operation. Pancreatitis is the cause assigned for recurrence of symptoms in fully 10 per cent. of the patients who have come to me for reoperation. This is explained by the close anatomic connection between the common duct and the head of the pancreas, the latter when enlarged obstructing the duct.

DR. E. MACD. STANTON, Schenectady, N. Y.: During the past ten years in collecting data on the end-results following gallbladder disease I have found that the actual facts, so far as I have been able to ascertain them, do not bear out a number of the conceptions vigorously maintained by many surgeons prominent in this work. It has been asserted that so-called cholecystitis without stones is a forerunner of gallstone disease; and that gallstones themselves are the results of an infection of the biliary tract by micro-organisms.

The latter assumption is, I believe, based on insecure data. The patients uncured of cholecystitis following cholecystostomy do not develop stones in a proportion greater than would be expected from the increasing age of the patients. The incidence of gallstones bears little if any distinct relation to demonstrable preexiting infection, but, on the contrary, does bear a distinct relationship to certain broad factors of sex and metabolism which point strongly to the assumption that the cholesterin-lipoid metabolism hypothesis of Ashaff, so well stated recently by Rothschild, is approximately the correct explanation of gallstone formation.

The actual available data show conclusively that so-called cholecystitis without stones and gallstone disease are etiologically as well as pathologically distinct and separate conditions. The symptoms in both diseases are similar, but the factors governing the end-results are different and, until we learn to separate the two groups whenever we attempt to

estimate end-results, we shall continue to have confusion in our ideas on the subject. Cholecystitis without stones is not cured by cholecystostomy, but I want to emphasize that the end-results following gallstone operations bear no definite relation to the amount of infection in the gallbladder present at the time of the operation. Infection does occur frequently as a complication of gallstones, and this infection may greatly increase the dangers and difficulties of the operation, but provided all stones are removed and there be no coincident duct strictures, the complicating infection of itself clears up promptly and has little demonstrable influence on the end-results.

SACRO-ILIAC JOINTS IN OBSTETRICS AND GYNECOLOGY *

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There has been so much discussion during the last decade about the sacro-iliac joints and kindred orthopedic conditions causing sacrolumbar backache, that it ought to have been sufficiently impressed on the profession that pain in this region might be due to a condition in the back itself; yet many women are unrelieved of their suffering during pregnancy, are submitting to endless local gynecologic treatments, and are undergoing useless pelvic operations because they have never had their backs examined.

Many of these women, who have been "going the rounds" of physicians' offices, have a sacro-iliac affection as their sole trouble, or as a result of their pregnancy or gynecologic condition. The fact that I have seen many of them overlooked is my only apology for again laying stress on such a common symptom as backache.

The anatomy of these joints is still a subject of contention; Goldthwaite and Osgood,[1] Meisenbach,[2] Albee and others agree that the sacro-iliac articulation is a "true joint, having all the common joint structures, and naturally subject to the same diseases and injuries as other joints" (Goldthwaite).

The opponents of this idea aver that the articulation is a synchondrosis, immovable except under pathologic conditions. However, all agree that there is physiologic mobility during pregnancy.

When one sees a gynecologic case with the same symptoms as he finds in the demonstrable relaxation of pregnancy, and yielding to the same treatment, he may be justified in considering them the same thing.

Movement of these joints during pregnancy is amply proved by the enlargement of the inlet in the Walcher[3] position and of the outlet by the exaggerated lithotomy position, neither of which increases could occur unless the sacro-iliac joints permitted movement of the sacrum on the ilia. This has been recognized for years.

Cantin,[4] in 1899, demonstrated mobility in 98 per cent. of 500 cases, in 15 per cent. of which there were symptoms.

Snelling,[5] in 1870, called attention to the significance of these relaxations, and said: "Relaxation of the pelvic articulations becomes apparent suddenly after parturition or gradually during pregnancy, permitting a degree of mobility which hinders locomotion and gives rise to most peculiar distressing and alarming sensations." His warning, given forty-seven years ago, has not been generally heeded.

The first case that called Goldthwaite's[1] attention to relaxation of the pelvic joints was due to pregnancy. Even the numerous articles and abundant discussion started in 1905 by the paper of Goldthwaite and Osgood have not been sufficient to make the profession realize that every woman with a backache should have her back examined.

The results of relaxation in pregnancy vary from simple backache or even less than a definite ache, only slight discomfort, to an inability to move without the most intense suffering.

Most women, except in the very severe cases, believe backache to be a necessary part of pregnancy and to be endured with womanly fortitude. I fear that too many physicians think the same thing.

I shall not attempt to report in detail a long series of cases, but will confine myself to giving the essential points in a few cases which illustrate some phases of the subject. The milder cases give only moderate discomfort, which, however, on account of the constant prolonged irritation during pregnancy, give rise to nervous symptoms and are a large factor in the neurasthenia of pregnancy. I have seen a properly fitted combination maternity corset, abdominal support and sacro-iliac belt change an irritable neurasthenic, bemoaning her pregnant state, into a happy, contented, prospective mother.

REPORT OF CASES

CASE 1.—This illustrates the extreme disability of pregnancy. Mrs. G. was eight months' pregnant, and was unable to walk without assistance; her figure bent in an attempt to protect the painful joint. Examination revealed left sacro-iliac relaxation, which was immediately relieved by tightly strapping the pelvis. She walked out of the office unassisted, erect and smiling.

CASE 2.—This illustrates how pregnancy may initiate sacro-iliac trouble and be aggravated by subsequent pregnancies, and finally how trauma may cause almost total disability. Mrs. B. had pain in the back during her first pregnancy, had been fairly comfortable after her delivery, but had to wear a belt to insure complete relief; the difficulty returned during her second pregnancy, and now in her third I had advised wearing the belt to avoid trouble. In an automobile accident she was rendered almost entirely incapable of movement on account of the sacro-iliac pain. By substituting adhesive straps for her belt she was made more comfortable, but was not free from pain. After delivery she began to improve, and in a few months could go without her belt.

CASE 3.—This case illustrates how easily a traumatic injury to the sacro-iliac joints may occur during pregnancy. Mrs. McC. went to the telephone; a rug slipped from under her as she arose, and in her attempt to regain her balance she was suddenly seized with a sharp lancinating pain in the back and fell to the floor. She found that she was unable to move, and had to be assisted to bed. When I saw her a few hours later I found an extremely painful left sacro-iliac joint, which was greatly relieved by strapping. I sent a trained corsétière to fit her with a combination maternity corset and sacro-iliac belt. This corsétière, who is a sufferer from sacro-iliac relaxation, wears a belt constantly, which she put on the patient to test her needs. The belt gave her so much comfort that she refused to give it back, and continued to wear it till her own was made. She had gone through two previous pregnancies without any backache.

CASE 4.—This case illustrates the trouble first appearing in the puerperium. Mrs. S. had gone through her pregnancy comfortably. In the night of the first day after her delivery

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Goldthwaite and Osgood: Boston Med. and Surg. Jour., May 18, 1905.
2. Meisenbach: Surg., Gynec. and Obst., May, 1911.
3. Walcher: Centralbl. f. Gynäk., **13**, 5892.
4. Cantin: Thèse de Paris, 1899.
5. Snelling: Am. Jour. Obst., **11**, No. 4.

she was suddenly awakened by a sharp excruciating pain in the back when she attempted to turn over in bed. When I saw her in the morning she had a very tender right sacro-iliac joint. Her pelvis was tightly strapped, followed by immediate, complete and permanent relief.

CASE 5.—This was another case in which my attention was first called to backache during the puerperium. A couple of days after the delivery of Mrs. D., the nurse reported that the patient could not sleep on account of backache, which on examination proved to be a tender right sacro-iliac joint, which was relieved by strapping. When explaining the condition to this patient, I remarked that many women had the same condition during pregnancy and often would not complain when they could just as well be relieved. She said, "That is my case; I have had this pain almost all the time I have been carrying my baby, but I thought it was a necessary part of my condition and I did not want to appear 'babyish'." I now question all of my patients about backache, and thus save much unnecessary suffering, for if one waits for complaints, he will discover only the bad cases.

CASE 6.—This illustrates the neglected case with final relief. Mrs. M. had characteristic symptoms of sacro-iliac relaxation during pregnancy. She was strapped with adhesive plaster, which gave her instant relief, but the adhesive was badly applied, resulting in blisters which provoked her, and she refused further treatment by belt or corset. She went through an uncomfortable pregnancy and puerperium. She resented any suggestion of treatment addressed to the pelvis, and went to an osteopath; receiving no relief, however, she finally returned, thinking she might have recurrence of a uterine misplacement, for which she had been treated. Nothing abnormal was found in the pelvis, and I reiterated my former diagnosis and insisted that she go to an orthopedist, which she did and was completely relieved with a 1 inch inelastic belt about the pelvis.

Injuries to the pelvic joints during delivery occur but are not within the intended scope of this paper.

The increasing size of the abdomen during pregnancy, like the pendulous abdomen, throws the center of gravity forward, to overcome which the back muscles are put on a strain, and the lumbar curve is increased, thus throwing the upper part of the sacrum forward. This attempt to restore equilibrium, being necessarily continued over a number of months, often results in sacro-iliac or muscular strain.

Every pregnant woman is a potential sacro-iliac patient. This is proved by the known relaxation, the demonstrable mobility in 98 per cent. of cases (Cantin[4]), and the fact that injury occurs more easily during pregnancy than at any other time. Stooping, lifting a child, a misstep, turning over in bed, or even normal movements, as arising from a chair, may precipitate a painful or even disabling condition. In my series of over 500 cases, 10 per cent. suffered enough to complain; and since I have inquired more carefully, I find that more than 20 per cent. acknowledge backache. For these reasons I believe every pregnant woman should wear a proper abdominal, back and pelvic support.

GYNECOLOGY

Retroversion, tumors and inflammatory processes in the pelvis not only cause pain in the pelvis but are so frequently accompanied by backache that this symptom is too commonly looked on as a pathognomonic sign of pelvic disease. It is, however, true that pain in the back directly referable to the sacro-iliac joints is often cured by correction of the gynecologic condition by operation or otherwise; on the other hand, it may work in just the opposite way, and the pelvic symptoms may be entirely due to sacro-iliac inflammation or relaxation, as I have repeatedly shown, by a disappearance of all pelvic tenderness by immobilization of the sacro-iliac joints. One must endeavor, therefore, to determine which is the primary trouble and address the treatment to that, which is not always easy. And again their interdependence is so close that neither seems to be more cause than effect, a true sacro-iliac and a real pelvic pathologic condition coexisting and each making the other worse, acting as it were in a vicious circle, the relief of one benefiting the other, but a cure of the patient resulting only when both are separately attacked.

The point, however, which I wish to emphasize is not the one so commonly recognized that backache is a symptom of pelvic disease, but the converse, that the backache may be an entity in itself; and not only that, but it may by referred sensations even simulate pelvic disease.

As Moore[6] says:

> In these cases all the pelvic organs are tender, presumably due to some intrapelvic condition; they have ovaries and tubes removed, are curetted, tamponed and douched without relief, and gradually drift into a neurasthenic condition of semiinvalidism. All of these cases should be cured or improved by proper treatment.

When one understands the distribution of the sacral plexus and the close proximity of some of the branches, especially the lumbar cord, to the joint, it is not difficult to understand how sacro-iliac disturbances could result in tenderness and pain referred to the pelvic organs.

CASE 7.—This case illustrates the type of patient that has pelvic symptoms with no pelvic disease whatever. Mrs. P. came to the office complaining of backache and indefinite pelvic discomfort. She had had the condition ever since the birth of her first baby. She had "doctored for female trouble" for years, and had had tampons and every other conceivable topical application. A pelvic examination revealed a normal condition. The sacro-iliac joint was very tender on palpation. When I told her I could find no female trouble at all she looked very skeptical, if not disgusted, which feeling, however, quickly disappeared after I had strapped her pelvis; for this was one of those spectacular cases in which the patient gets immediate relief. Here was a patient who had been maltreated for years, had spent large sums of money, and endured great suffering, all for the lack of knowledge by her many physicians that backache may be due to something else than pelvic disease, the lack of complete examination and the neglect of well established diagnostic and therapeutic measures. She left the office without pain, wore the straps for a few weeks, never had a return of the pain, and somewhat to my surprise did not need a permanent belt.

CASE 8.—This case illustrates two phases of this subject: first, that her symptoms, which she thought pelvic, were in the sarco-iliac joint; and second, that the condition of the joint was due to a remote condition, that is, focal infection. Mrs. L. was the mother of one child, aged 7 years. Several months before consulting her brother, who was a physician, she had noticed backache and more or less pain and heaviness in the pelvis. I was asked to examine her to find out what was the matter in the pelvis. I found nothing abnormal except some tenderness. On account of the pain in the back I examined the sacro-iliac joints, one of which was found quite tender. I thought the whole trouble was in the sacro-iliac joints. The pelvis was strapped with great relief, which, however, was not complete. In further search for the cause, roentgenoscopy revealed the focal infection of the teeth. Rapid improvement followed removal of all the offending teeth.

Young[7] says:

> Impairment of the sacro-iliac joints frequently invites disaster by offering fruitful field for the invasion of infecting processes.

6. Moore, S. B.: Virginia Med. Semi-Month., March 10, 1911.
7. Young, J. K.: Am. Jour. Med. Sc., 1912, 144, 96.

It is a far cry from pelvis to mouth, but well illustrates where we may be led if we follow our cases through a complete study instead of jumping at conclusions because the patient refers her pains to certain organs.

Much of the backache occurring during menstruation is in the sacro-iliac joints, owing possibly to congestion or relaxation at this time. Sometimes the relaxation is "so marked as to seriously interfere with locomotion." Wearing a sacro-iliac belt during menstruation often gives great relief.

In a series of more than 500 cases, many other reports could be given to prove the one point on which I wish to place emphasis, that backache and even definite pelvic symptoms may be entirely due to lesions in the sacro-iliac joints, or kindred orthopedic conditions.

However, when one is laying stress on a particular condition, one must avoid giving the impression that one believes it to be the sole factor.

I hope I may not fall into the obsession of believing that the sacro-iliac joints are the only cause of backache, even in the sacral region. I ought not, for I have seen many cases with other orthopedic conditions as the cause of this particular symptom, for example, shortening of one leg, flatfoot, lesions in the lumbar sacral joint, spinal curvature, muscle strain due to faulty attitude, and rupture of aponeurotic and muscle fibers.

CASE 9.—This case will illustrate how we may fall into such an error. Mrs. F. had been in a runaway accident fifteen years before I saw her. This was followed by severe backache, which disappeared in a few weeks and did not return until three years before, when she was suddenly taken with a "stitch" in her back when she stooped over to pick up a bottle of water, and could not straighten up. This was diagnosed as sacro-iliac subluxation, and so treated with some relief. I was asked after she had undergone three years of unsuccessful treatment to see if there was anything in the pelvis to account for the condition; examination revealed nothing. As most uncured patients do, she went from physician to physician and from specialist to specialist. Finally a diagnosis of separation of muscular attachments near the sacro-iliac joints was made by a prominent orthopedist, who gave her the greatest relief she had experienced by building up the shoe on the affected side and readjusting her corsets.

It behooves the obstetrician and gynecologist to remember that not all lower backaches, even with pelvic symptoms, are due to pelvic disease; the surgeon should recollect that they do not necessarily mean visceroptosis, dilated large intestine, appendicitis or genito-urinary affections; and the general practitioner, that the neurasthenic may have a real basis for her nervous symptoms in her back itself.

As Dunlop[8] says, the symptoms may be so vague or referred to so many places as to suggest the neurasthenic. He reported one case in which there were pains referable to the pelvic organs, appendix and genito-urinary organs. Even intestinal stasis was considered, and yet the patient was cured of all these by proper immobilization of the pelvic joints.

There is not time in this paper to take up the points of diagnosis. In differential diagnosis and treatment we must work in close conjunction with the orthopedist.

The principles of treatment are simple, calling in the main only for immobilization of the joints by adhesive straps, sacro-iliac belts or special devices, the application of which is described in orthopedic works.

8. Dunlop: Virginia Med. Semi-Month., May 12, 1911, p. 66.

Every pregnant woman, I believe, is a potential sacro-iliac patient. Therefore, I urge that she should be fitted to a specially designed maternity corset, which is a combination of abdominal support, sacro-iliac belt and corset back. It is so constructed as to get well under the abdomen, and really support it; it is provided with straps which may be tightened about the pelvis without constricting the abdomen; it has also a sacral pad, a high steeled corset back which gives the customed support to the back, and the whole is designed to correct faulty attitude and take the strain off the back muscles and sacro-iliac joints.

In the simple backaches of pregnancy or gynecology, I first use adhesive straps or the 1 inch inelastic belt for diagnostic purposes and to be worn till the maternity apparatus is fitted and made.

These simple devices usually suffice, but the more extreme cases often tax the skill of even the best trained orthopedists, with whom we must work in the closest conjunction.

The general practitioner can successfully treat most of the cases with adhesive straps, or the 1 inch inelastic belt tightly buckled about the pelvis over the ordinary corset, or by the sacro-iliac belt.

SUMMARY

The sacro-iliac joints are certainly movable during pregnancy, and while usually fixed in the nonpregnant state, may be movable under certain conditions.

This normal relaxation makes these joints very vulnerable; they are often the cause of discomfort, pain, displacement and even disability. Every pregnant woman is a potential sacro-iliac patient and should have her pelvis supported and faulty attitude corrected by a properly adjusted maternity corset.

Gynecologic affections may cause pain in the sacro-iliac region, and sacro-iliac lesions alone may simulate pelvic pathologic conditions; therefore every woman with sacrolumbar backache should have her back examined to make sure whether a pelvic or back trouble is the cause of the symptoms, or whether the two are coequal factors. The treatment of neither can be wisely decided until the exact rôle the other may play has been determined.

119 Institute of Anatomy, University of Minnesota.

ABSTRACT OF DISCUSSION

DR. EDWARD REYNOLDS, Boston: I am confident that the long continued controversy among the orthopedists as to the cause of sacro-iliac backache, to which the essayist refers, is due to the failure of both sides to appreciate that there are several predisposing causes which produce much the same symptomatology, and temporary relief is often obtained from the same mechanical treatment. I think these backaches may be due to (1) actual looseness of the sacro-iliac joints; (2) to inherent skeletal disproportion, causing faulty posture, and (3) to intra-abdominal lesions which cause similar faulty posture. All these lesions create the same secondary disturbance, and, consequently, the same symptoms, since the symptoms are always the result of the secondary lesion, an overstrain and usually a consequent exudate in the lower part of the erector spinae muscles. The case is further complicated by the fact that any two, or sometimes all three, of the same lesions may be present in the same case, but the controversy has become so heated that neither side is ready to admit that the other may be partly right. The cases which the orthopedists see usually belong to one of the two first classes, while those which the gynecologist sees almost always belong to one or both of the two latter classes. The diagnosis between the underlying lesions rests necessarily on physical examination, both gynecologic and orthopedic, and

difficult cases often demand consultation, and perhaps conjoint treatment, between experts in the two lines. I am in the most hearty sympathy with the reader's position that backache should be investigated in every case from both points of view, and also that it is not a difficult thing for a gynecologist to learn the orthopedic examination and so fit himself for a differential diagnosis in most cases.

Dr. Robert L. Dickinson, Brooklyn: I have had the good fortune to have in my office a colleague who has trained me to know the loose joint and the faulty attitude. Like the reader of the paper, I have long practiced strapping and belting the joints and have secured a large amount of comfort from a very slight procedure. Therefore, I think no more important point has been made than that of the necessity of the routine examination of the sacro-iliac joints. The procedure of Goldthwaite, by which the patient lies full weight on the back and the leg is thrown forward with no flexion of the knee, will develop it in most cases. The method of Truslow, with the patient erect and a stethoscope over the joint to detect the sound is also a method of value. Dr. Reynolds also has lent symmetry to the discussion by insisting that we study attitudes both during pregnancy and in the gynecologic patient. The truth lies in neither of these completely. We must correct false attitudes and may thus cure backache, otherwise incurable, with a properly adjusted corset; or a weak back may be strengthened by muscular development.

Dr. Isadore L. Hill, New York: I feel that Dr. Litzenberg is to be thanked and congratulated for taking up for study and discussion one of the minor ailments of pregnancy. If any branch of obstetrics at present is neglected it is the study of these minor inconveniences. Although the woman is safeguarded against oversight with reference to her pelvis, which results in the necessity of serious measures at the time of her labor, for the most part women are still accepting the general attitude that pregnancy is an uncomfortable condition of necessity, and I think obstetricians are apt to neglect the smaller matters which it is possible to relieve.

Dr. Jennings C. Litzenberg, Minneapolis: I used the expression sacro-iliac and allied orthopedic conditions. That was simply an expression for giving in a sentence what would take a book to cover, and which Dickinson, Reynolds, Lovett and others took several years to work out. Every woman with a backache should have her back examined. This is not done. My sole object in bringing up this question was to emphasize a neglected minor condition, and if you will look at your programs you will see that the last sentence in my paper is a plea for more attention to minor symptoms. It is not, however, from the patient's standpoint a minor symptom. Why do we always emphasize the big thing? The discussion has fully justified me in bringing before you this little question of lower backache. I did not take any time to go into the diagnosis or treatment. Two or three have asked me how I applied these straps. They must be so placed that they are below the anterior superior spines and above the trochanters and applied tightly. This will give the necessary support and relief. We must correct faulty attitudes caused by pendulous abdomens, both in the pregnant and nonpregnant, by the high back corset. If I shall have succeeded in having the backs examined of some of the thousands of women who have backache, I shall be satisfied.

Ophthalmia Neonatorum.—The proportion of pupils blind from ophthalmia neonatorum in thirty-one state schools for the blind in 1916-1917 was, among a total of 2,961 pupils, 742, or 25 per cent. During those years the number of new admissions were 558, 109 of whom, or 19.5 per cent., were blind from ophthalmia neonatorum. Among the pupils in classes for the blind in the public school systems of Chicago, Detroit, Jersey City, Milwaukee, New York City and Racine, Wis., a total of 375 blind, there were 54, or 14.4 per cent., blind from ophthalmia neonatorum. This information has been tabulated in detail by the National Committee for the Prevention of Blindness.

BREATH SOUNDS IN INCIPIENT TUBERCULOSIS *

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Alteration of the respiratory murmur is usually regarded as the initial, or among the initial, physical signs of early tuberculosis. A diversity of opinion exists, however, concerning the incidence of the various respiratory alterations and their relative value in diagnosis. Some authorities agree that the granular type of inspiratory murmur is the initial manifestation of the incipient lesion; others emphasize the prolonged high-pitched expiration as indicating early involvement, while still others attribute only slight significance to either of these changes. This confusion may be ascribed in part to the difficulty in distinguishing true pathologic changes in breath sounds from those variations which occur normally.

The present work was undertaken to determine, if possible, the clinical importance of altered breath sounds in pulmonary tuberculosis with the hope that any knowledge thus obtained might facilitate an early diagnosis. To this end a study has been made of the frequency and character of the respiratory changes in 124 cases of incipient disease confined to one or both apexes, and of the comparative significance of such changes when considered both alone and in conjunction with other physical signs and diagnostic procedures.

Although previous studies include a description of the breath sounds over the entire chest, the observations here recorded are restricted to the apex of the lung (a term herein employed to include that part of the lung above the second intercostal space in front and the spine of the scapula behind). This plan was adopted, because early in the present investigation it was discovered that a detailed study of the breath sounds over the entire chest subjected the patient to an undesirable physical strain. Furthermore, the apexes of the lung are particularly adapted for a study of this kind, since in tuberculosis the initial physical changes occur in these areas in approximately 90 per cent. of all cases. Finally, by confining the study to patients presenting only apical involvement, other conditions, which in themselves might alter the character of the breath sounds at the apex, were excluded and a more accurate idea of the modifications of the vesicular murmur in incipient disease was made possible. Among the conditions thus excluded are tuberculous involvement in parts of the lung other than the apex, spinal curvatures, deformities of the thorax, obstruction of the upper air passages, tumors of the mediastinum, marked deviations of the trachea, etc.

In the present investigation the following method was adopted: The entire chest was first auscultated superficially for the purpose of determining the normal vesicular murmur peculiar to the individual, a requisite for the correct interpretation of pathologic variation in breath sounds. Following this an attempt was made to locate the site of the lesion at the apexes from a study of the respiratory murmur during quiet then during slightly exaggerated, and finally, forcible breathing, the patient breathing orally and noiselessly and maintaining as far as possible the normal ratio between inspiration and expiration. These findings

* From the New York State Hospital for Incipient Pulmonary Tuberculosis.

were then compared with the results of a complete physical examination, including the use of the roentgen ray and the fluoroscope. By studying the breath sounds before the other physical signs were elicited, and without knowledge of the roentgen ray and fluoroscopic findings, the examiner was uninfluenced by facts that might tend to color his interpretation of alterations in the respiratory murmur. Previous work had suggested the advisability of this plan.

Certain observations in physical diagnosis made by me in the course of previous work have been applied to the present study because of their aid in determining more precisely the value of respiratory alterations in tuberculosis. The application of these principles in this study helps to explain the discrepancies that exist between the present findings and those of previous observers.

These observations are as follows:

1. The employment of diaphragmatic breathing is an effective measure in differentiating granular breathing from those extrapulmonary sounds which simulate this type of breathing.

2. The observation of the time interval and force of the respiratory act is essential for the accurate differentiation of physiologic alterations in the duration and intensity of the respiratory murmur from those of pathologic origin.

TABLE 1.—FORTY-SEVEN CASES OF INCIPIENT TUBERCULOSIS PRESENTING A LESION AT THE RIGHT APEX

Granular breathing	1
Weakened breathing	5
Increased vesicular	3
Cog-wheel	..
Prolonged expiration	20
Bronchovesicular	6
No change in respiratory murmur	12
Total	47
Breath sound changes at the normal left apex	8
Weakened breathing	2
Increased vesicular	4
Prolonged expiration	1
Bronchovesicular	1

3. The lungs glide beneath the ribs during respiration is important in correlating pathologic conditions any given area is considerably greater than that represented by the bell of the stethoscope. This observation is important in correlating pathologic conditions with alterations in the respiratory murmur.

The present study comprises 124 cases classified as incipient according to the classification adopted by the National Association for the Study and Prevention of Tuberculosis. Tubercle bacilli were demonstrated in the sputum of approximately 24 per cent. of the cases. A comparison of the breath sound changes in the sputum-positive and sputum-negative cases failed to reveal any distinct differences, and for this reason they have been grouped together in the accompanying tables.

In eighty-one instances the lesions were unilateral, occurring at the right apex in forty-seven, and at the left apex in thirty-four. In the remaining forty-three cases the lesions were bilateral, slightly more extensive at the right in twenty-six, and at the left in seventeen.

The results of the study of the breath sounds in the 124 cases with apical involvement are presented in the tables. In those cases exhibiting more than one alteration in the vesicular murmur over an apex, only the most marked alteration has been noted.

Of the forty-seven cases of early disease with a lesion at the right apex, thirty-five, or 74.4 per cent., presented respiratory alterations, while twelve, or 25.6 per cent., gave no evidence of respiratory change. In eight instances the character of the breath sounds at the left apex suggested a lesion in this area, although further physical examination, the roentgen ray and the fluoroscope did not confirm this suspicion. Among the thirty-five cases exhibiting respiratory alterations, the inspiratory murmur was most affected in nine instances, the expiratory in twenty, and in the remaining six instances, the inspiratory and the expiratory murmur were about equally affected. In other words, in disease at the right apex, the expiratory murmur is altered more frequently than the inspiratory.

TABLE 2.—THIRTY-FOUR CASES OF INCIPIENT TUBERCULOSIS PRESENTING A LESION AT THE LEFT APEX

Granular breathing	1
Weakened breathing	10
Increased vesicular	6
Cog-wheel	1
Prolonged expiration	4
Bronchovesicular	2
No change in respiratory murmur	10
Total	34
Breath sound changes at the normal right apex	9
Weakened breathing	2
Increased vesicular	1
Prolonged expiration	4
Bronchovesicular	2

Of thirty-four cases of early involvement at the left apex, the findings were positive in twenty-four instances, or 70 per cent., and negative in ten instances, or 30 per cent. Respiratory changes suggesting a lesion at the normal right apex were noted in nine instances. Among the twenty-four positive cases exhibiting respiratory alterations, the inspiratory murmur was affected in eighteen instances, the expiratory in four instances, and in the remaining two instances both were equally affected. The respiratory variations at the left apex in contrast to those at the right are predominantly inspiratory in character.

In the forty-three cases in which the disease was bilateral, changes in the breath sounds suggested the presence of a lesion at both apexes in nine, at the right apex alone in fourteen, at the left apex alone in eleven, and in the remaining nine no changes in the breath sound were noted.

An analysis of the respiratory variations in forty-three cases presenting bilateral apical disease shows, as in those with unilateral involvement, that at the right apex the expiratory, and at the left apex, the inspiratory murmur is most frequently altered. In approximately 50 per cent. of the cases in this group, no respiratory alterations were detected, a fact explained largely by the absence of a normal standard for purposes of comparison.

TABLE 3.—FORTY-THREE CASES OF INCIPIENT TUBERCULOSIS PRESENTING A BILATERAL APICAL LESION

	Right Apex	Left Apex
Granular breathing	1	0
Weakened breathing	3	5
Increased vesicular	2	8
Cog-wheel	1	1
Prolonged expiration	12	4
Bronchovesicular	4	2
No change in respiratory murmur	20	23
Total	43	43

The results of the present study do not agree in certain essentials with those of previous observers, notably in the large proportion of cases (approximately 40 per cent.) in which the findings resulted negatively, and also in the difference in the incidence

of the various respiratory modifications as observed at the right and the left apex.

COMMENT

Granular Breathing.—Granular breathing, or one type of the *rauhes Atmen* (rough breathing) of the Germans, is regarded by most observers as one of the earliest respiratory alterations in tuberculosis (Grancher, Minor, Turban, Sahli, Otis, Pottenger and Fishberg). For the satisfactory demonstration of granular breathing at the apex, the muscles in this region must be in a state of relaxation, because their active contraction may at times produce sounds indistinguishable from granular breathing, and thus lead to confusion in diagnosis. This requisite is obtained by means of abdominal breathing. In this type of breathing, respiration is conducted solely by the piston-like excursions of the diaphragm, the thorax is fixed, and the muscles in the region of the apex are relaxed.

Abdominal breathing, therefore, represents an efficient method for the elimination of those extrapulmonary sounds which arise in the contracting muscles and which simulate granular breathing. On the other hand, if the granular type of respiratory murmur is heard during abdominal breathing, one is justified in concluding that the vesicular murmur has undergone a definite pathologic alteration.

The value of abdominal respiration in the detection of granular breathing is illustrated by the fact that in a series of cases previous to its employment, the incidence of this sign in early tuberculosis was about 18 per cent., while subsequent to its use only three cases in the present series, or 2.81 per cent., exhibited this sign.

Changes in the Duration and Intensity of the Respiratory Murmur.—Since physiologic variations in the duration and intensity of the vesicular murmur may be confused with those of pathologic origin, a knowledge of the factors responsible for such variations in health is essential for the correct interpretation of their occurence in disease. When the volume of air inspired in a given unit of time is maintained, the intensity of the murmur remains unaltered. Thus, if on successive respirations the air intake is 500, 1,000 and 1,500 c.c., and the time interval occupied by the respiratory act is one, two and three seconds, respectively, no change occurs in the intensity of the respiratory murmur, since the air intake in a given unit of time (500 c.c. in one second) is the same in each instance. The depth of the respiration, however, is altered, as is the duration of the respiratory murmur. The view expressed by certain observers, among others Sahli[1] and Barker,[2] that intensity varies with the depth of respiration, is therefore open to question. Variations in the intensity of the respiratory murmur are due to differences in the volume of air intake in a given unit of time. The greater the volume the more intense the murmur, and vice versa. In other words, the duration of the vesicular murmur, more especially the inspiratory phase, depends on the time interval occupied by the respiratory act, the intensity on the force of the respiratory act. Variations in the force of the respiratory act may also alter the character of the respiratory murmur in the region of the apexes, a fact that increases the difficulties of diagnosis.

Normal variations in the duration and intensity of the vesicular murmur may be determined by observing the movements of the chest and abdomen and noting the time interval and force of the respiratory act. The detection of such physiologic variations is essential for the correct interpretation of similar alterations occurring with pathologic conditions.

As the movements of the chest during respiration are greater in front than behind, the examiner will find it advantageous to select the front of the chest when making such observations. By the adoption of this procedure, variations in the duration and intensity of the respiratory murmur have been reduced approximately 20 per cent. as compared with those obtained during a previous study of this sign.

In the present study the vesicular murmur was either weak or intensified, with corresponding changes in its duration in sixteen of the ninety instances of disease at the right apex, and in thirty-two of the seventy-seven instances of disease at the left apex.

Prolonged Expiration.—Prolonged expiration, first advanced by Jackson of Boston in 1833 as a sign of tuberculosis, is generally regarded as one of the first alterations in the respiratory murmur to appear in early tuberculosis. In ninety instances of disease at the right apex, prolonged expiration was the most frequent sign, occurring in thirty-two instances, or approximtaely 35 per cent.; while in seventy-seven instances of disease at the left apex, this sign was present in only eight instances, or approximately 10 per cent. At the left apex the changes in the expiratory murmur, as compared with those at the right apex, were not marked.

Physiologic prolonged expiration is invariably more marked at the right apex, and in some instances may be entirely confined to this region. According to Bandelier and Roepke,[3] it occurs at the right apex in 33 per cent. of healthy adults. The relative frequency and more pronounced character of physiologic prolonged expiration at the right apex and the inability on my part to differentiate with accuracy such alterations in the respiratory murmur from those of pathologic origin explain, in part at least, the high incidence of this sign at the right apex.

Prolonged expiration more marked at the left than at the right apex, on the other hand, forms one of the most trustworthy physical signs associated with disease at the left apex. Infrequent in early disease, its incidence increases with the advance of the disease.

In thirty-one instances of moderately advanced disease in which expiration was more pronounced at the left than at the right apex, the left apex exhibited a definite lesion in thirty instances, while in only one case was no evidence of a lesion demonstrable.

Bronchovesicular Breathing.—Bronchovesicular breathing occurred in ten of the ninety instances of disease at the right apex, and in four of the seventy-seven instances of disease at the left apex. Bronchovesicular breathing and prolonged expiration, because of their close similarity to each other, are frequently confused. In their differentiation the personal equation is an important factor. This point should be borne in mind in studying the present statistics.

For the correct interpretation of breath sound change, a knowledge of the movements of the thorax and lungs during respiration is important. It is generally assumed that no change occurs in the position of the auscultated field during respiration. For instance, the pathologic basis for one type of

1. Sahli: Klinische Untersuchungsmethoden, Ed. 5, 1908, p. 296.
2. Barker: Monographic Medicine, **2**, 518.
3. Bandelier and Roepke: Die Klinik der Tuberkulose, Ed. 3, 1914, p. 69.

bronchovesicular breathing is explained by Turban as due to superficial aerated lung tissue overlying an area of partial or complete consolidation. The air current first impinging on the consolidated tissue gives rise to the bronchial quality, and later the expansion of the superficial air-containing lung produces the vesicular quality.

This explanation of bronchovesicular breathing presupposes that the lung is more or less a fixed and immobile organ, a view in accord with current ideas. That the contrary is true, however, and that the lung exhibits considerable movement on respiration, may be illustrated by the following procedure: If the bell of the stethoscope is placed over the lower margin of the lung and the patient directed to take a deep inspiration, at the height of inspiration the lower margin of the lung is no longer beneath the bell of the stethoscope, but may be 2 inches or more below it, depending on the fulness of inspiration. In other words, the lung glides beneath the stethoscope during respiration, and the area of lung auscultated over a given point in the thorax is therefore considerably larger than that represented by the bell of the stethoscope. The area of lung auscultated varies also with the type of respiration. This is illustrated by observing the movement of an isolated shadow in the lung by the aid of the fluoroscope and noting the difference in the position of the shadow with relation to the neighboring rib during thoracic and abdominal breathing. Clinically this change in the lung movement is shown by the striking variation that may occur in the size of the râle area in certain cases on abdominal and thoracic breathing. With the fact in mind that the lung glides beneath the ribs, bronchovesicular breathing may be explained by the presence of contiguous areas of consolidated and air-containing lung, which alternately pass across the auscultated field during respiration.

Furthermore, in the interpretation of the respiratory modifications other than bronchovesicular, and in those studies conducted for the purpose of correlating the physical signs and the roentgen-ray findings with those discovered at necropsy, the relative movements of the chest wall and the lung require consideration.

A striking feature of the data presented is the relatively large number of negative findings. Of the ninety instances with involvement at the right apex, the examinations were positive in fifty-eight and negative in thirty-two, while at the left apex in seventy-seven instances, the findings were positive in forty-four and negative in thirty-three. Among the cases presenting respiratory alterations, in many instances the variations deviated so slightly from the normal that the sign could be termed indefinite and merely suggestive. Of the eighty-one instances of unilateral disease, alterations of the respiratory murmur over the healthy apex occurred in seventeen, or 21 per cent.

The selection of the apexes for the present study and the difficulty encountered in this region in differentiating physiologic from pathologic changes in the breath sounds may explain the reason for the comparatively large number of cases in which the study of the breath sounds alone failed to prove of diagnostic value.

Finally, the present study indicates that expiratory alterations predominate at the right apex, while at the left apex the inspiratory murmur is most frequently affected, an observation which, if verified, would afford a reasonable explanation why certain observers have emphasized expiratory and others inspiratory alterations in the respiratory murmur in early diagnosis.

CONCLUSIONS

1. Abdominal breathing is an effective method for the differentiation of granular breathing from those extrapulmonary sounds simulating this type of breathing.

2. The observation of the time interval and force of the respiratory act is essential in the differentiation of physiologic from pathologic alterations in the duration and intensity of the respiratory murmur.

3. The lung glides across the auscultated field during respiration.

4. Variations in the force of the respiratory act may alter the character of the respiratory murmur in the region of the apexes.

5. Expiratory alterations predominate at the right apex, inspiratory at the left apex.

6. Prolonged expiration, when more pronounced at the left than at the right apex, is a reliable sign of disease at the left apex.

7. Bronchovesicular breathing may be explained by contiguous areas of consolidated and aerated lung that alternately glide beneath the stethoscope during respiration.

8. The frequency with which alterations in the respiratory murmur occur over the healthy apex in unilateral disease deserves attention.

9. Physiologic respiratory modifications interpreted as pathologic represent the most frequent error in the physical examination in early tuberculosis.

10. A study of the breath sounds in early disease is often difficult and misleading, and for this reason should not be unduly emphasized in diagnosis.

CERTAIN FACTORS IN THE ETIOLOGY OF GALLSTONES

ON THE BASIS OF THEIR CHEMICAL COMPOSITION

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The fundamental work of Aschoff and Bacmeister[1] has shown that gallstones are to be classified, as regards their chemical composition, into the following groups:

1. Pure cholesterol stones.
2. Stratified cholesterol-calcium stones.
3. Cholesterol-pigment-calcium stones.
4. Composite stones, composed of cholesterol and a mantle of cholesterol and calcium.
5. Bilirubin-calcium stones, usually found in the bile passages of the liver.
6. The very rare calcium carbonate stones.

The studies of Rothschild[2] and of Henes[3] have drawn attention to the possible importance of states of hypercholesterolemia in relation to the formation of the chelesterol gallstones.

These studies, together with those of Aschoff,[4] and

1. Aschoff and Bacmeister: Die Cholelithiasis, Jena, 1909; Beitrag z. path. Anat. u. z. allg. Path. (Ziegler's), 1908, **44**, 528.
2. Rothschild: Beitr. z. path. Anat. u. z. allg. Path., 1914, **60**, 66; 1915, **60**, 227. Aoyama: Deutsch. Ztschr. f. Chir., 1914, **132**, 234. De Langen: Presse méd., 1916, **24**, 332.
3. Henes: Deutsch. Arch. f. klin. Med., 1913, **3**, 122; The Value of the Determination of the Cholesterin Content of the Blood in the Diagnosis of Cholelithiasis, THE JOURNAL A. M. A., July 11, 1914, p. 146; Surg., Gynec. and Obst., 1916, p. 91.
4. Aschoff: München. med. Wchnschr., 1906, **53**, 1847; 1913, **60**, 1753.

of Chauffard,[5] and others of the French school,[6] have produced a reaction against the former explanation of Naunyn[7] as to the pathogenesis of gallstones. Naunyn concluded that the cholesterol of the bile is neither a product of general metabolism nor a specific secretion product of the liver, and that the chief source of the cholesterol in gallstone formation was from the degenerated and desquamated epithelial cells of the gallbladder and bile tracts. Aschoff and the French observers, however, finding no abundance of cholesterol in the wall of the gallbladder, do not accept this origin.

They believe that in the formation of gallstones the first step is the formation of a pure cholesterol stone without an inflammatory cause, owing to an actual increased excretion of cholesterol by the liver, or an excess of cholesterol in the blood, or because of resorption of solvent substances from stagnating bile. These primary cholesterol stones then produce an inflammation and occlusion, leading to the formation of the common mixed stones.

Rovsing[8] has also shown that Naunyn's conclusions cannot be accepted. He asserts that recent research seems to have established that, just as the urine becomes abnormally concentrated during the course of a febrile disease, the bile is liable to become less fluid. In the inspissated bile, precipitation is liable to occur and the elements thus thrown down may agglomerate into concrements. Among the facts on which he bases this assertion are the results of Boysen's chemical study of the gallstones found in 200 cadavers with cholelithiasis. The young, freshly deposited gallstones, and likewise the nucleus of all other kinds of biliary concrements, he found consisted of bile pigment and calcium, "pigmentkalk," as he calls it. Other elements of the bile are precipitated on this nucleus or are drawn in by osmosis, especially cholesterol. The conditions during pregnancy and during a febrile disease are liable to favor this inspissation. The concrements resulting from it are all of about the same age, confirming the transient nature of the cause producing them and explaining why new ones do not develop after the crop has been removed. Boysen found invariably that the gallbladder was sound when the gallstones were of the small, primary bile-pigment calcium type.

A still more conclusive argument in favor of this assumption of the origin of gallstones is that systematic bacteriologic study of the gallbladders removed in 320 cases at Rovsing's clinic between 1899 and 1914 showed that the organ was entirely sterile in fully 54 per cent., without a trace of infectious processes. The proportion in aseptic cases showing the different types of gallstones ranged from 52.7 per cent. of fifty-five cases in which a single large stone was found, to 77 per cent. of twenty-seven cases presenting the small mulberry-shaped stones. These findings demolish entirely Naunyn's theory that gallstones are deposited in consequence of an infectious process. Other data cited also disprove this, especially the fact that the symptoms of cholecystitis always follow, never precede, the gallstone formation. When the pigment and calcium are precipitated from abnormally thick bile, the resulting concrements may or may not irritate the gallbladder and ducts enough to set up inflammation. Rovsing reviews all the theories proposed concerning the pathogenesis of gallstones and shows the fallacies of each, while he expatiates on the way in which all the phenomena connected with cholelithiasis are logically explained by precipitation as the result of thickening of the bile under some temporary condition inducing transient inspissation.

This paper contains the results of analysis of the stones removed by operation in fourteen cases of diagnosed cholelithiasis. A careful history as to previous infectious disease was taken. The cholesterol was estimated by the method of Windaus.[9] The calcium was estimated by McCrudden's[10] method after ashing and extracting the ash with hydrochloric acid.

ANALYSIS OF GALLSTONES REMOVED BY OPERATION

Case No.	Weight of Stones, Gm.	Water Per Cent.	Calcium Oxid Per Cent.	Cholesterol Per Cent.	Nitrogen Per Cent.	Remarks
1.	4.4697	4.7	0	61.2	0	No infection
2.	0.5980	5.7	90.2	trace	0.16	Typhoid
3.	0.4345	2.5	78.1	0	0.24	Typhoid
4.	3.7730	8.3	90.3	trace	0.17	Typhoid
5.	14.5028	30.8	0	64.2	0	No infection
6.	4.2196	17.7	72.6	5.4	0.10	Septicemia
7.	0.3002	47.4	34.1	0	0	Typhoid
8.	1.2305	3.9	7.6	80.2	0.05	No infection
9.	17.6280	5.2	0	93.8	0	No infection
10.	2.7400	4.1	0	89.2	0.02	No infection
11.	1.2646	1.9	35.2	trace	0.06	Pneumonia
12.	0.2670	0.5	30.4	0	0.18	Paratyphoid
13.	2.3230	0.8	0	93.8	0	No infection
14.	0.7996	5.0	78.2	trace	0.14	Typhoid

It may be seen from the accompanying table that in every case with a previous history of an infection the gallstones were chemically composed of calcium salts, while in those cases without a previous history of infection the gallstones were composed of cholesterol.

Mignot[11] and also Rosenow[12] have shown the relation of infection to the formation of gallstones. Rosenow found an almost complete absence of bacteria in four pure cholesterol stones, which seems to bear out the data contained in this paper, showing that the cholesterol gallstones are possibly not due to a previous infection. Churchman[13] has reported a case of acute typhoid cholecystitis with large amounts of calcium soap in the gallbladder, which also seems to show that the calcium stones are more apt to be due to an infectious process.

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5. Chauffard: Leçons sur la lithiase biliaire, Paris, 1914.
6. Grigaut: Le cycle de la chloesterinemie, Paris, 1913. Laroche and Flandin: Compt. rend. Soc. de biol., 1912, **72**, 660.
7. Naunyn: Cholelithiasis, 1896, München. med. Wchnschr., 1898, **45**, 1293.
8. Rovsing: Hospitalstid., 1915, **8**, 249.
9. Windaus: Ber. d. deutsch. chem. Gesellsch., 1909, **42**, 238; Ztschr. f. physiol. Chem., 1910, **65**, 110.
10. McCrudden: Jour. Biol. Chem., 1911, **10**, 187.
11. Mignot: Arch. gén. de méd., 1898, **2**, 129; 263.
12. Rosenow, E. C.: Bacteriology of Cholecystitis and Its Production by Injection of Streptococci, THE JOURNAL A. M. A., Nov. 21, 1914, p. 1835; Jour. Infect. Dis., 1916, **19**, 527-556.
13. Churchman: Johns Hopkins Hosp. Bull., 1911, **22**, 223.

THE REDUCTION OF GASTRIC ACIDITY

PRELIMINARY ACCOUNT OF METHODS

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It is generally admitted that the hydrochloric acid of the stomach comes from the sodium chlorid of the blood and that the body gets its chlorids from food and common salt. To do away with hyperacidity or hypersecretion what means is more logical and direct than to shut off the food supply of chlorids? Clinicians often take a first step toward this when they tell their patients with ulcer to avoid the use of salt. About six months ago my attention was drawn to the question when a patient returning to the use of salt had a marked increase of acid.

Dogs have been given food deprived of salts, and in most cases the gastric juice has fallen off in strength or amount. The work of Cahn, Wohlgemuth, Pawlow, Dastre and Frouin is convincing in this connection, although Pugliesse writes to the contrary. Usually the animal did not thrive on the diet poor in salt. One writer (Forster) who had fed his animals on food of this sort announced that they died more quickly than if they had been utterly starved! These findings made a profound impression: the absence of salt was blamed for the speedy death. Although the chemist Bunge protested that the death was due not to lack of sodium chlorid but to certain other deficiencies of the diet, and although one of his associates, Luinin, actually added this salt to the same diet and found that the animals still could not live on it, the impression remained current that experiments had conclusively shown that a diet quite lacking in sodium chlorid brings early death.

It may be admitted that food without inorganic salts will not keep up life. In treating hyperacidity we do not demand an absence of all inorganic salts, or even of the element sodium; we demand the absence only of chlorin. When the salts containing chlorin are removed from food, other inorganic salts also are removed; but later these other salts may be returned to the food, and the difficulty thereby obviated. So far as I know, no one has attempted to prepare a diet, well balanced and unobjectionable save that it lacked the single element chlorin, to discover whether the organism could get along on this diet and whether it would reduce the gastric acidity. Perhaps we should still find that "a very far going deprivation of chlorin may lead to general disturbances—which vanish after subcutaneous or rectal injections of large quantities of physiological salt solution," as Strauss warns. This is worth testing again. Even if untoward symptoms should arise and prove that the removal of chlorids can be carried too far, it is conceivable that a limit might be found at which favorable clinical results are achieved but beyond which one should not go.

Any diet used for the purposes in question must not be lacking in those elements essential to life sometimes called "vitamins." Early workers apparently did not know this. Luinin, as has been stated, deprived food of mineral constituents and found that his animals could not live on it even after sodium chlorid had been added; and so he went farther, restored the other inorganic salts, but still found that the animals could not live on the diet, although they did not die so early. However, the animals got along on milk alone. This point puzzled Bunge. "It is a noteworthy fact," he says, "that although animals can live on milk alone, yet if the constituents of milk which according to the present teaching of physiology are necessary for the maintenance of the organism are mixed together, the animals rapidly die." Today we might reply to this riddle that the constituents of the milk used failed to include vitamins—elements present in whole milk and essential to life. From all of this we learn to use diets well balanced in protein, fat and carbohydrate, lacking not in vitamins or inorganic salts or sodium, but only in chlorin.

Obviously there is need of more tests on man. Vincent announced in 1904 that a number of his patients with hyperchlorhydria had obtained real benefit from a diet poor in salts, and he did experiments to prove the point. Laufer confirmed his results, and more recently Enriquez and Ambard have published observations and warmly recommend this treatment for hyperacidity under certain indications. On the other hand, Leo gets discouraging results, while the experience of H. Strauss makes him very pessimistic. The latter warns that even after a prolonged salt-free diet — when the urine no longer has more than a trace of chlorids — the tissues persist in holding on to a supply of chlorin, which they furnish to the gastric glands, so that secretion of acid continues.

Here is a real difficulty. But perhaps it has been exaggerated. New methods may make this clear. Aspirations made every half hour or so for a period of hours will tell us about the total amount and strength of secretion for this time; we can compare the results obtained in this way before and after the chlorin-free diet. The curve of secretion thus obtained might show a lessening of secretion caused by the diet which would not be revealed by the older method of testing with a single daily aspiration. Furthermore, we can take special steps to meet the difficulty. Linoissier early pointed out that the favorable results with dogs were aided by drawing off the juice, thus ridding the system of chlorin. In man the gastric juice is conserved and resorbed in the intestine, and the same dose of salt can be used again indefinitely for the secretion of gastric juice. We must seek to promote elimination of chlorids by giving plenty of potassium salts (Bunge), avoiding the use of sodium bicarbonate, which decreases elimination (Goldberg and Hertz), by frequent aspiration, and by giving plenty of water (Rulon and Hawk). But if excess of water increases the gastric secretion, as they suppose, it may prove better to restrict the use of fluids.

The method of attack, then, is to use a diet well balanced save for lack of chlorin. The foodstuffs should be either naturally poor in this element or freed of it by boiling. To season his food the patient is given a special inorganic salt mixture of about the same proportions as found in milk by Bosworth and Van Slyke, except that calcium lactate is substituted for calcium chlorid. As these salts are also acceptable to patients with nephritis who are on a salt-free diet as seasoning in place of common salt, the following formula is given:

	Gm.
Dicalcium phosphate	5|8
Monomagnesium phosphate	3|4
Dipotassium phosphate	7|7
Potassium citrate	1|7
Sodium citrate	7|4
Calcium lactate	4|

Mix and pulverize.

Important articles are fresh meat, potatoes, oatmeal, carrots and cauliflower, cut fine and then boiled for hours with several changes of the water; stewed apples, prunes and apricots; very weak tea and coffee; butter freed from salt by washing fine particles thoroughly in running water; one egg and about 50 c.c. of milk or cream per day, but no more. Distilled water is used for drinking, but if need be, tap water may be used for cooking if the chlorin content is low, as in Chicago.

Choice among the foregoing articles of course will vary with the nature of the disorder, the complications and the stage of treatment. Solid food may be hashed or mashed before serving. In some cases it might be well to begin with a period of starvation, following with the special diet; and later during convalescence the amount of milk and cream might be increased.

A sample diet for a day might be as follows: (The amounts of each article readily can be arranged to meet the caloric requirements of the individual.)

Breakfast.—Oatmeal gruel with sugar and a little cream; apple sauce; very weak coffee with sugar and cream.

Dinner.—Fresh meat, boiled and hashed; potatoes, boiled and mashed; carrots likewise; special salt-free butter; orange juice diluted and sweetened.

Supper.—One egg, raw, boiled or poached; boiled rice; purée of prunes; very weak tea with sugar and cream.

It is apparent that for gastric ulcer additional treatment may be needed, such as rest in bed, aspiration, and the administration of bismuth and alkalies, including calcined magnesia; but potassium bicarbonate will take the place of the sodium salt if it is sought to increase the excretion of sodium chlorid.

For the test meal either the Ewald or, better, several hundred c.c. of sugar solution, weak tea, or plain water may be given. The acidities are determined by titration, and the chlorids in the juice and daily urine are estimated by the McLean and Van Slyke method.

This preliminary account of work which has been under way since about May 1 is published in the hope that these principles and methods may interest others. The so-called "salt-free" nephritic diets of hospitals as a rule cannot be adapted for treating hyperacidity under this principle. A sample of "salt-free" bread from one hospital was found to contain a relatively high percentage of sodium chlorid. According to results with dogs, it is anticipated that about ten days or more of dieting may be required before a reduction of gastric acidity may begin to appear.

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Comparison of Salvarsan and Japanese Salvarsan Substitutes.—In Japan various substitutes for salvarsan and neosalvarsan have been placed on the market under such names as arsaminol, sodium arsaminol, ehramisol, neoehramisol, tanvarsan, neotanvarsan and arsemin. These Japanese preparations were tested pharmacologically on rats and dogs, and also compared with control experiments, using Ehrlich's old salvarsan. Clinical tests were also made in syphilitic cases. The workers, K. Dohi, H. Nakano and T. Kambayashi (Japanese Medical Literature, 1917, **2**, Part 2, p. 9, through Chemical Abstracts, Nov. 10, 1917, p. 2934) state that: "The toxicity of all preparations was noticeably less than the German one, although the possibility is allowed that the latter may have changed somewhat with age. The Japanese preparations seemed to have fully as much value as the original and yet lacked much of the reaction that usually accompanies the injections of the latter."

INTESTINAL OBSTRUCTION, COMPLETE AND INCOMPLETE *

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A complete obstruction of the bowel near to the stomach usually causes death in man and in the lower animals in less than 100 hours. A similar obstruction in the aboral portion of the intestine may not cause death for a week. An incomplete obstruction at any point in the intestine causes symptoms that differ from the complete form only in degree. Problems connected with obstruction are among the most interesting and important in medicine. What is the toxic agent which, with tachycardia and convulsions, but without elevation of temperature, destroys life so speedily in duodenal obstruction, leaving no discoverable trace at necropsy? Is it a product of bacterial infection, or is it due to perversion of the great glandular system of the alimentary canal? Is it analagous to the death caused by the removal of the parathyroid or other glands? Does the mere blocking of the intestine in this, biochemically the most active portion of the canal, amount to an actual severance of an interglandular relationship that is not compensated for through the blood vessels or other channels, an ancient and potent interaction that is necessary to the maintenance of life and for the continuance of which an open intestine is necessary? Why is it that the nonprotein nitrogen and other components of the blood increase enormously after duodenal obstruction, while no such change is noted in ordinary bacterial infection? Is a proteose similar to that described and isolated by Whipple the cause of death, or is the toxic substance, like prosecretin, of so delicate, evanescent and unstable a character as to defy detection by test tube analysis? If so, is not this an example of the truth of Haldane's recent assertion that we are emerging physiologically from a materialistic to a vitalistic basis of research? What is constipation if not a protective symptom analogous to abdominal rigidity which seeks to give surgical rest when and where needed? What relationship, if any, can be shown to exist between the well known chronic symptoms of intestinal toxemia and the little known but much dreaded symptoms of duodenojejunal obstruction? Why do certain of these chronic toxemics improve when the diseased and often pigmented cecocolon is removed? Is it possible to find any efficient medical treatment until some of the foregoing questions are answered? If surgical, is a given case to undergo resection or some form of anastomosis? What is to be expected of the different forms of anastomoses that produce partial exclusion? May there be recognizable hereditary structural changes predisposing to the occurrence of such chronic subobstruction as one often sees clinically in the chronic intestinal invalid? If so, may one utilize some such type of classification as that of Bryant—herbivores, carnivores and neutrals to aid in the diagnosis and care of these cases?

These are some of the engrossing problems which confront the student of atypical conditions in the alimentary canal. Some of them are answerable. Many are still open to free discussion. Of the remainder we frankly know little or nothing. It is axiomatic,

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

however, that no treatment, either medical or surgical, can be of real value unless it is based on a greater knowledge than we at present possess. Researches, therefore, into the physiologic pathology of the alimentary canal are evidently of the utmost importance.

Turning to a brief consideration of these questions, I may state that in a paper published eleven years ago from the Laboratory of Experimental Surgery at Columbia,[1] I related a series of experiments made during the previous years as a result of which we had concluded that neither shock nor the absorption of food products nor bacterial infection had anything whatever to do with death in duodenal obstruction. I found that by placing a triangular ligature between the stomach and the small intestine just aboral to the point of total obstruction, this ligature would produce drainage in about seventy-two hours, and that there was a very constant line, which I referred to as the lethal line of the duodenum, oral to which obstructions were fatal under the conditions indicated, but harmless if made aboral to it. From this, and from the fact that necropsies, most carefully and repeatedly made, failed to demonstrate any lesion whatsoever save capillary dilatation of the terminal colon and occasionally of the stomach and liver, I "determined that death was due to some more subtle factor than those considered . . . that there might be a relation between this form of intoxication, if such it be, in dogs, and the so-called tetany of human beings; that the question seemed to have resolved itself now into a determination as to whether death is due to an intoxication resulting from a disturbance of the balance of the secretions which pour so plentifully into the intestine in this particular region; . . . whether secretion or other secretions from the duodenum itself had anything to do with the cause of death."

In a paper published one year later,[2] quoting Wilms, I noted that death from duodenal obstruction subvenes with extreme rapidity, and that up to that date all patients were believed to succumb to toxic absorption, resulting from the decomposition of intestinal and stomach contents. Starvation and lack of absorption of water, which in those early days had already been thought by some to be a factor and which have latterly been brought into great prominence, notably by the valuable researches of Hartwell and Hoguet, were looked on as "hardly to be considered when one reflects that absorption of water takes place almost entirely in the colon, and can therefore not be materially influenced by the position of the obstruction in the small gut." Observations that we have made show conclusively that putrefaction has nothing whatsoever to do with the cause of death in intestinal obstruction.

In 1914, in a paper[3] based on researches made in the Surgical Research Laboratories of the Mayo Clinic and New York University, I concluded with Schultz that the power of the liver to pair camphor and glycuronic acid is impaired after duodenal obstruction. This is presumably an evidence of impaired liver function. It is, however, not reflected in the histologic appearance either grossly or microscopically.

The decrease in the water-content of the tissues in duodenal obstruction is about the same as obtains after salivation by pilocarpin for four days or after fasting for seven. As this decrease produced no visible change in either case before euthanasia, it is reasonable to believe that it produces none in intestinal obstruction. The loss is 10 per cent. The duodenal obstruction (death) undoubtedly arises from an interference with cellular reactions of the intestinal epithelium. The resulting toxins undoubtedly are at least in part eliminated from the stomach and colon.

I reported also the increase of nonprotein nitrogen in duodenal obstruction, concluding that all recent studies "point to aberrant activity of the duodenal and probably pancreatic cells; that the old hypothesis that the toxin is of bacterial or food decomposition origin may be discarded; that dehydration is of no greater importance in this than in other toxemias; that there is an important ratio between the toxicity of the intestinal epithelium and its digestive power; that the intricate syndrome autotoxemia in man will be better understood when we know the cause of death in duodenally obstructed dogs."

Through the courtesy of Professor Gettler of the department of chemistry, New York University, I am now able to report further studies in the chemical picture of the blood in duodenal obstruction in dogs, and to contrast it with his well known studies along this line in human intestinal toxemias and in infections. Thus a great deal of evidence has accumulated in the past fifteen years pointing to the accuracy of my hypothesis that death in duodenojejunal obstruction is not due to any form of bacterial action whatsoever, or to toxins derived from the food, but to a disturbance of the hormone or enzyme producing activities of the intestinal epithelium and the consequent production of toxic bodies that cannot be isolated by ordinary chemical analysis—in other words, that death is caused by conditions analogous to those induced by removal of the parathyroids or other glands. If this is true, and if my failure to corroborate Whipple's efforts to prove that a proteose is the cause of death is not due to inaccuracies, then the evidence points more than ever to the gland perversion or inhibition theory already referred to.

CHEMICAL BLOOD PICTURE IN COMPLETE DUODENAL OBSTRUCTION *

	Before Operation	Hours After Operation			
		24	48	72	96
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Nonprotein nitrogen...	44	70	102	92	136
Urea nitrogen	18	48	70	65	112
Creatinin	0.1	0.4	0.9	0.3	0.5
Uric acid	0.7	0.9	2.5	21.5	15.7
Sugar	125	110	111	143	150
Alkaline reserve	67	68	55	52	50

* Dog 209, Department of Chemistry, New York University, May, 1917. No infection; no elevation of temperature; average pulse, 150; tremors; death, one hundred and tenth hour.

TECHNICAL STUDIES IN DOGS

Investigations with a view of determining the best technic for developmental reconstruction (right side colonic resection) were conducted by resecting 10 cm. oral and 10 cm. aboral, using the ileocecal valve as the dividing line. Three forms of anastomosis were used, "end to end"; "end to side" and "side to side." The majority of the animals developed a semisolid or watery stool after operation. Stools became normal in seven days, on an average. From a technical standpoint, lateral anastomosis was the easiest to perform. Although it was the most difficult and showed the greatest mortality, end to end anastomosis gave the best postoperative results. Dilatation of the oral end of the intestine was noted both in lateral and in end to

1. Draper, J. W.: Observations upon Form of Death Resulting from Certain Operations upon the Duodenum and Jejunum, Surg., Gynec. and Obst., May, 1906.
2. Draper, J. W.: Is Death in High Intestinal Obstruction Due to the Absorption of Bile? (Rockefeller Institute Fellowship Research), Ann. of Surg., October, 1907.
3. Draper, J. W.: Studies in Intestinal Obstruction, THE JOURNAL A. M. A., Sept. 26, 1914, p. 1079.

side anastomosis. The "end to side animal" vomited postoperatively for several days, and was the worst as regards vomiting. There was less vomiting after the end to end anastomosis. Roentgenoscopy was applied to all animals within two and a half to three hours after the bismuth meal given before and after operation.

Roentgenoscopic interpretations:

Best results—end to end—no effect as regards delay, local or reflex.

Moderate results—end to side—moderate delay in stomach; no anastomotic delay.

Worst results—lateral—marked delay in stomach (reflex), slight at anastomosis.

Prof. George Wallace of New York University kindly directed for me the intravenous introduction of a chemical residue derived from the treatment (Whipple's technic) of 1,000 c.c. of proximal loop fluid from duodenally obstructed dogs by Professor Gettler, department of chemistry. We were unable either to cause the dog's death by intravenous injection of the entire amount collected, or to show any reaction whatsoever. Dr. Stark made the obstructions and collected the fluid.

SUMMARY

Our experiments on animals have led us to believe that death in high intestinal obstruction is due to a perversion of enzymal function. The symptoms are so fulminating in character as compared with those of obstructions aboral to the point of maximum physiologic enteric activity that until recently they have received far more attention both experimentally and clinically than those of the caudad obstructions.

This is true of both complete and incomplete types. It is the purpose of this paper to correlate the two and to show not only the close relationship which actually exists but also to point out the great importance of experimental surgery to clinical progress.

It is natural, after all, to expect that in a segment of the intestine so highly specialized as the duodenum, perversion of function should rapidly reach a climax. Here the most complex functions of digestion are consummated with rhythmic precision. It is not surprising that so gross an insult as must attend obstruction must be followed by violent biochemical reactions. A marked acidity of the gastric contents causes the pancreatic juice to be poured out, and initiates peristalsis in the gallbladder. Very high acidity causes a marked flow of bile. On the other hand, the cecocolon bears such a close resemblance to the stomach both functionally and mechanically, and these characteristics are so gross as compared with those of the duodenojejunum that they necessarily do not react so actively to interference. Embryologically they have practically the same developmental history. Until recently the cecocolon has received only limited study as compared to the stomach. This, too, is natural, both because of the nearness of the stomach to the duodenum, gallbladder and pancreas, and because many of the lesions of the colon are at first referred to the stomach. Only a few years ago Moynihan in his classic work on duodenal ulcer gave what he considered a typical picture of duodenal ulcer symptomatology which was thought to be pathognomonic, but which we now know can be caused by a chronic appendix, an elbow adhesion, a gallbladder, a long sigmoid or other lesions. He later admitted that it is almost impossible in some cases to differentiate intra-abdominal lesions through a study of their subjective symptoms alone. It is necessary to have a clear understanding of comparative embryologic pathology in order to appreciate the conditions often encountered when the human abdomen is opened. One is surprised to hear frequent and bizarre efforts to explain by mechanics atypical variations in the sigmoid that have a patent embryologic origin. The sigmoid and the cecum are two of the most variable organs in the body, and the esoteric stomach symptoms that arise are due to the variations rather than vice versa.

The intestine is developed by buds. This permits of wide variations in type. The primitive intestine is a good deal like that of the fish, two loops lying side by side. Like other theories that are mechanical in basis, the mechanical rotation of the intestine is now set aside, and it is shown to be a well-ordered and systematic process depending on accommodation to existing conditions and regulated by intra-abdominal pressure. In the embryo the liver is so large that very little room is left for the intestine, and all the bowel, except its beginning and end, develops for a period outside the abdomen.

Now, as the liver fails to keep pace with the growth of the abdomen, the pressure within is diminished and the intestine gradually recedes within, until finally the primitive cecum and transverse colon accept the place allotted to them and gradually recede to a resting place over the duodenum and in contact with the kidney—the so-called second position. Here it remains until after birth, when it usually migrates toward the iliac fossa. During the process of rotation and subsequent migration, many irregularities may arise, which account for much adult pathology. Notable among these we may mention frequent delamination of the peritoneum and failure of fusion. My colleague, Jerome Lynch, has given much thought to these conditions. We believe that adventitious membranes are not in themselves harmful, but if, as a result of failure of fusion, partial obstructions periodically supervene, resulting in atrophy and pigmentation, as observed by our colleague, McFarland, in fresh cecal tissue, then those adventitious membranes are converted from normal peritoneum to connective tissue bands. Every one is aware that should this process continue, contracture follows and the typical elbow deformity previously described by us is inevitable. Furthermore, we are of the opinion that the dividing of normal extraneous peritoneal bands very often may precipitate what I have just described.

These physiologic and embryologic considerations help us to realize that, while there are great variations in the alimentary canal, it must be considered as a whole and that throughout it is subject to the same fundamental laws. What is true of one part is in a limited and discretional sense true of the rest, and this, in spite of the singular analogies between the gastric and colonic ends, which are purely mechanical, as contrasted with the duodenojejunum, which is almost wholly biochemical in action.

Thus, one is tempted to hazard the hypothesis that the syndrome in man called intestinal toxemia is really a subacute or chronic manifestation of the acute duodenal toxemia observed in obstructed dogs, modified perhaps in many ways by the toxins of a secondary bacterial infection. I have been forced to a favorable consideration of this hypothesis by an exhaustive study of twenty-nine cases of developmental reconstruction of the colon in which the right

colon has been removed either by my colleague, Jerome M. Lynch, or myself, and recently reported by me.[4] Satterlee, Smythies, Einhorn and others have repeatedly noted that marked constipation can occur without the symptoms of toxemia, and it is evident that constipation is a protective symptom. We are miserable and stupid when constipated, but not because of the protective symptom constipation. We are constipated because of intra-enteric glandular disturbances similar to, but less severe than, those which occur in a duodenally obstructed dog.

That bacterial toxins serve to complicate the syndrome of autotoxemia is not to be questioned, particularly in view of the researches of Satterlee, who has achieved such marked results in otherwise hopeless cases through the injection of autogenous colonic vaccines. His recital of a fatal case of intestinal obstruction that produced such marked muscular spasm as to be mistaken for tetanus is a valuable addition to the literature. In Robert Brown's case of cecosigmoidostomy, which was afterward cured by the developmental reconstruction of the colon, the patient suffered from typical tetanoid seizures in the hands until relieved by operation.

Thus, our human and experimental animal studies continue to support the nonbacterial biochemical theory as to the cause of death in obstruction, and also to yield additional evidence that the symptoms of human autotoxemia have a common origin with those of a duodenally obstructed dog.

ABSTRACT OF DISCUSSION

DR. JOSEPH C. BLOODGOOD, Baltimore: Dr. Draper was one of the first to call attention to duodenal death as a definite thing. I have seen duodenal death; I have had a case of it; at least, I thought it was duodenal death, and I performed an exploratory operation on the woman. I have seen postoperative duodenal death after a plastic operation for pyloric stenosis when obstruction was not there; and when the stomach had been resected and a gastro-enterostomy performed, it showed a kink and the duodenum closed in both ends. I have had two such cases in my own practice. I always think of it when I resect a stomach, and always try, if I must resect a stomach, to reestablish the continuity by suturing the duodenum to the stomach. There must be some experimental work along this line, and any man who devotes his time and labor to this work is one we should encourage in every way. I do not see much hope for the clinical side. I have the impression that it is one of the peculiar problems the progress of which must come from the experimental side.

Dr. Draper said he did not read the chemical part of his paper. This is really a discussion in embryology; but few medical students can discuss these matters intelligently. One of our greatest teachers has brought out the fact that in the medical curriculum we have exaggerated biology, while chemistry and physics are not given their proper place. There are few of us who can think in terms of chemistry, although we have had some chemistry. We have anatomic vision, pathologic and bacteriologic vision, but when it comes to chemistry in our profession, it is made conspicuous by its absence, except in a very few. One of the important things in changing the medical course today is the emphasis of chemistry and physics.

DR. JOHN BRYANT, Boston: In 1910-1912 I had a very intimate experience with what medicine and surgery could do at that time for the chronic intestinal invalid. This experience was not wholly satisfactory; therefore, I concluded to make some personal investigations. As a result of my postmortem work I published a provisional classification of human types. This classification extended to man the use of the terms carnivorous and herbivorous as commonly understood in comparative anatomy.

There is a general impression, based doubtless in part on current textbooks of anatomy, that the human viscera are made on one model. This is not so. The intestine, for example, may be 10 or 40 feet long, but as in the lower animals, so in man, a short intestine tends to go with the long body form and a long intestine with the wide body form at a given height. All this affects the disposition and function of the viscera.

Dr. Lewis has reported from Worcester, on the basis of my classification, a series of 500 schoolchildren in whom only 10 per cent. were of a textbook normal build. In every ten of these children there was one normal to three of the wide or herbivorous type and six of the thin or carnivorous type. This was certainly a considerable variation on either side of the so-called normal, and was associated with definite variations in mentality.

Treatment of the chronic intestinal invalid must be approached simultaneously from three different points of view—mental, medical and orthopedic. Mental peculiarities must be considered, diet must be regulated, and with these must be employed reconstructive orthopedics.

In the practical matter of diet, I have found that though many invalids cannot take eggs, meat and fish for more than a few days consecutively without getting some sort of reaction, they may, on the other hand, often do well if the use of these three articles is restricted to two or three days in the week. They need the stimulus from these foods, but must get it through an alternating diet.

DR. JEROME M. LYNCH, New York: In listening to the discussion on constipation in this section I noticed that a great many men confounded constipation and autointoxication. Now, it does not follow by any means that because a patient is constipated that he is autointoxicated, or that because he has autointoxication he is constipated. It does not always follow that because a man or woman is not of normal type that that patient does not suffer from intoxication. I have noticed recently a great many women of the male type who suffer from a very marked type of autointoxication. In making experiments in ileocecal insufficiency I have become rather convinced that it is not really a surgical but a medical condition, for the sphincter can be closed by epinephrin. It is really remarkable how few men study a subject before applying a remedy. If the question of ileocecal insufficiency had been studied from the physiologic standpoint before it was studied from the medical and surgical or therapeutic standpoints, it would be seen that the problem was a question more of internal secretions than a mechanical one. Yet, I have heard one of our foremost roentgenologists say that it is entirely a mechanical problem. In 1822 a man named Goode drew attention to the fact that the ileocecal valve (so called) was not really a valve, but that it was a muscle, and one hundred years afterward, we have exactly the same problem presented to us showing that, notwithstanding the fact of the very wonderful studies of Elliott and other men, we have made very little advance.

The question of intestinal obstruction, both of the oral and aboral end, is interesting. The oral has received a good deal more careful scientific study than the aboral; the complete more than the incomplete. Dr. Bloodgood has done much pioneer work on the colon. I have done only thirty developmental reconstructions, as it has taken a long time to find out the type of case in which operation should be performed, and long, careful postoperative study extending over several years seems the best and only basis for decision. Draper and I are convinced that the symptoms of complete duodenal and incomplete colonic obstruction have a common origin in an interference with the internal secretions of the gut and its derivatives, the liver and pancreas, with secondary bacterial infection. These disturbances have been rightly called autointoxication, but it is a gross mistake to suppose that they are caused simply by absorption of decomposed food. This is supported by the studies of Boldireff on the periodic functions of the gut. The attendant constipation and diarrhea are probably protective rather than provocative. In the advances of the physiologic surgery of the gut we should

4. Before the 1917 meeting of the American Society of Gastro-Enterology.

never forget its debt to Mr. Lane, whose work, already superseded, gave the original impetus and placed us where we stand today.

Dr. John W. Draper, New York: I should like to add, in support of what Dr. Lynch has just said, that we have very interesting proof, I think, of the statement that constipation does not mean intoxication. We have usually performed a lateral anastomosis in removing the right side of the colon, and as just said, that results in a great deal of delay at the point of anastomosis. Nevertheless, in these cases the patients are often relieved of this intricate symptomatology which we call autotoxemia, although they are thoroughly constipated at the point of anastomosis, often for 100 hours, and it does not appear to interfere with their well-being. Constipation is a protective symptom and patients are constipated because they are autotoxemic, not vice versa.

TEN YEARS' EXPERIENCE WITH THE GRADING OF MILK

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In 1907, the board of health of Radnor Township, Delaware County, Pa., formulated a set of milk hygiene rules for producers of milk to be sold in the township, and as these rules have now been in force for ten years their effect on milk production and milk producers can be well seen.

Radnor Township is a distinctly rural community of the better class, consisting of the combined villages of Wayne and St. Davids, about 15 miles from Philadelphia on the main line of the Pennsylvania Railroad, having about 6,500 inhabitants and surrounded by a district of farms and country estates. It includes also a portion of Rosemont with several smaller settlements. The milk rules of the board of health govern not only milk produced in the township, but also all milk brought into the township for sale, the dairies producing such milk being subject to the board's inspection. No producer can register as a retailer or wholesaler of milk in the township unless he first files a certificate of health for his cattle signed by a competent veterinarian recognized by the board, and these certificates must be renewed every six months.

This paper does not attempt to give all the milk rules of the board, but gives only those referring directly to classification. These rules include a system of classification and grading of dairy farms which has so far given excellent results. The board from the first has recognized six classes or grades of milk. These grades are based on a combination of the use of the dairy score card, giving the results of a sanitary inspection of the dairy, the cows and the milk handlers, and of an examination into the methods employed, and the degree of cleanliness found; also on a frequent bacteriologic and chemical testing of samples collected at the farms and from the milk wagons at irregular intervals.

Class A milk must have a bacterial colony count of not over 10,000 per cubic centimeter, with no disease-producing organisms or peptonizers, and must come from tuberculin tested cattle with a dairy scoring of not less than 90 out of a possible 100 points on the score card, which entitles to the rating of an "excellent dairy."

Class B milk must have a bacterial colony count of not over 100,000 per cubic centimeter with no disease-producing organisms or peptonizers, and must come from healthy cattle with a dairy scoring of not less than 80, which is required for the rating of a "good dairy."

Class C milk must have a bacterial colony count of not over 500,000 per cubic centimeter with no disease-producing organisms, and must come from healthy cattle with a dairy scoring of not less than 70, which is rated as a "fair dairy."

Class D is pasteurized milk having a bacterial colony count of not over 1,000,000 per cubic centimeter before pasteurization and not over 50,000 per cubic centimeter after pasteurization with no disease-producing organisms.

Class E includes all raw milk with a bacterial colony county of over 500,000 from dairies with a score card under 70.

Certified milk from farms having the certificate of the Philadelphia Pediatric Society forms the sixth class, and is practically of the same grade as Class A milk.

The grading of dairies is done by the milk hygiene agent of the board, a trained veterinarian, and the bacteriologic and chemical examinations are made by the state livestock sanitary board laboratory and a commercial laboratory in Philadelphia, samples being collected and shipped by the milk hygiene agent or the health officer. Reports are made to the board quarterly, the classification in such reports being based on three or more surveys and milk examinations during the quarter. In case less than three surveys have been made, and this happens only with the new producers, the dairy is reported as unclassified. These quarterly reports are published as news by the local weekly paper, and many consumers are influenced thereby in the choice of a milk dealer.

The score card used in Radnor Township is the card recommended by the United States Department of Agriculture, with some modification to adapt it to local conditions. This card aims to place special emphasis on cleanliness and common sense in the handling of milk rather than on any special elaborate or expensive equipment or buildings. It has been found more than once that a careful, cleanly dairyman can produce excellent milk in an old fashioned country barn. On the other hand, there is abundant evidence that the best, most elaborate and expensive of dairy barns and equipment and the finest pedigreed stock will not insure a good rating without constant care and intelligent supervision. The grading of milk also includes consideration of milk temperature at dairies, in milk depots and on wagons, and an inspection of milk depots.

Table 1 gives a summary of the January reports for the ten years and shows very little change in the certified or pasteurized classes, but very interesting results in Classes A, B, C and E, illustrating the effect of continued inspection and publicity on milk producers as a whole. The sudden decrease in the number of producers in Class E seen in 1916 and their elimination in 1917 is due to the fact that in 1915 the board decided to prohibit the sale of Class E milk unless clearly labeled as "cooking milk," and after due notice this rule began to be enforced in April, 1916. As will be seen, this resulted in all of the Class E producers who would not or could not improve conditions going out of business. Of the eighteen producers in this

class, in 1915, one half, or nine, when they found it necessary, succeeded in moving up into Class B or C, while the other nine simply stopped producing milk for sale.

Table 2 lists only Classes A, B, C and E, and gives the percentage of each in the total for each year and shows clearly a gradual and steady improvement from

TABLE 1.—CLASSIFICATION OF MILK IN RADNOR TOWNSHIP*

Class	January									
	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
Certified class, having certificate from Philadelphia Pediatric Society	2	2	2	2	2	2	3	3	3	3
Class A, excellent dairy; sanitary score 90-100; bacterial colony count not over 10,000 per cubic centimeter; tuberculin tested cattle	1	1	0	2	2	2	2	2	3	5
Class B, good dairy; sanitary score 80 or over; bacterial colony count not over 100,000 per cubic centimeter	9	8	6	6	7	10	8	19	18	17
Class C, fair dairy; sanitary score 70 or over; bacterial colony count not over 500,000 per cubic centimeter	10	19	22	25	29	23	22	8	20	17
Class D, pasteurized; bacterial colony count not over 1,000,000 per cubic centimeter before and not over 50,000 after pasteurizing	1	1	1	1	1	1	2	1	2	1
Class E, poor dairy; sanitary score under 70; bacterial colony count over 500,000 per cubic centimeter	29	20	19	18	15	17 3	19 1	18 2	9 4	0
Not classified										
Total	52	51	50	54	56	58	57	53	59	43

* Based on the last three sanitary examinations of milk and the bacteriologic and biochemical tests of milk.

year to year. In the beginning there were over 59 per cent. of poor dairies, over 20 per cent. of fair, over 18 per cent. of good, and less than 3 per cent. of excellent dairies. A change was seen the first year in a lessening of Class E to under 42 per cent., with a corresponding increase of Class C to over 39 per cent. No very marked change is seen in the better classes until 1915, when, under the stimulus of the new rule, Class B increased from under 16 to over 40 per cent., while Class C dropped to under 18 per cent. In 1916, Class B lost one to Class A, but Class C increased from 17 to 40 per cent. at the expense of Class E, which dropped from over 38 to 18 per cent. In 1917, Class A gained two from Class B, and Class B increased from 36 to over 43 per cent, partly from Class C and partly from Class E. Class C showed a further increase from Class E, which was entirely eliminated. An added inducement for the higher class of producers was the fact that Class A milk has always brought about 2 cents a quart more than other milk, which the board feels is justified by its inspection and tests. For the first five years there was a steady lessening in the numbers of Class E, with a corresponding increase in Class C; but then through carelessness there was a change for the worse, and it was halted only by the introduction of the new rule requiring labeling of Class E milk.

The decrease in the total number of dairies in 1917, as seen in Table 1, is due not entirely to the strict enforcement of rules, but also to the general economic situation. The high cost of materials, feed and labor has resulted, not only here but throughout the state generally, in discouraging many farmers from producing milk. This condition is probably less marked in Radnor Township than in many places, since, owing to the careful supervision of the milk supply, the consumers are more ready to pay a fair price for milk. When this work was begun, milk sold for from 5 to 8 cents a quart, while now few producers get less than 12 cents.

The results here shown were obtained not by the adoption of milk grading alone, but by constant intelligent supervision on the part of the milk hygiene agent. The aim of the board was not so much to do police work and punish delinquents as to do missionary work and encourage the dairymen to be constantly improving conditions. It has seldom been necessary to prosecute delinquents, and, after the first natural opposition to a new plan, the dairymen have come more and more to welcome the visits of the milk hygiene agent and to look to him for advice and help in planning improvements. In 1916, our agent received forty-seven requests for such advice and help. The majority of these were during the poliomyelitis epidemic. Also, consumers frequently ask him for advice in the selection of a dairy.

Strict impartiality is essential to success in dairy grading. Among the milk producers in Radnor Township are some wealthy gentlemen farmers with whom dairying is a hobby, and these receive the same treatment as the poorest farmer with only a few head of cattle. It occasionally happens that, on account of carelessness in the dairy, one of these farms is summarily removed from the excellent or good class to the fair or even poor class. On two occasions one of these dairies, not the same one each time, has been forbidden to sell milk at all until conditions were improved.

This brief paper will show what may be done in a rural community to improve the milk supply by the grading of milk producers, if accompanied by constant intelligent supervision and frequent examinations. Mild rules will not enforce themselves, however, and constant watchfulness is needed; but the Radnor board feels that time and money spent in this work is well worth while, and would regret very much to be obliged, for any reason, to discontinue this work.

TABLE 2.—PERCENTAGE OF MILK PRODUCED IN RADNOR TOWNSHIP IN CLASSES A, B, C AND E, BASED ON TOTAL OF THESE FOUR CLASSES*

Year	Producers in Four Classes	Percentage in Each Class				Total per Cent.
		Class A	Class B	Class C	Class E	
1908	49	2.0	18.4	20.4	59.2	100
1909	48	2.0	16.7	39.6	41.7	100
1910	47	6.0	12.8	46.8	40.4	100
1911	51	3.9	11.8	40.0	35.3	100
1912	53	3.8	13.2	54.7	28.3	100
1913	52	3.9	19.2	44.2	32.7	100
1914	51	3.9	15.7	43.1	37.3	100
1915	47	4.3	40.4	17.0	38.3	100
1916	50	6.0	36.0	40.0	18.0	100
1917	39	12.8	43.6	43.6	0.0	100

* Calculated to nearest tenth per cent.

Insect Transmission of Disease.—Dr. L. O. Howard in a recent address before the Washington Academy of Sciences gave some statistics as to the number of insects which stand in etiologic relation to various diseases. Up to the present, discoveries have been recorded of the carriage of 226 different disease organisms to man and animals. An important recent discovery is that of the transportation by wind of the body louse, which is the carrier of typhus fever. In the *Bulletin* of the Pasteur Institute, Paris, for Dec. 15, 1916, there was a review of seventeen papers on the louse in connection with disease by authors of seven different nations.

AN ADDITIONAL CASE OF SPOROTRICHOSIS *

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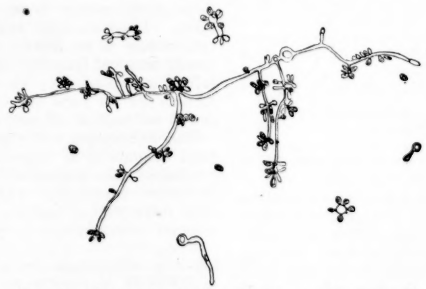
OMAHA

Although sporotrichosis has been known only since 1898 a considerable volume of literature has been published, and a constantly increasing number of cases is being reported. While the cases reported in America are still less than a hundred, this seeming rarity in its occurrence is due more probably to the fact that the condition is usually not recognized clinically. It often closely resembles syphilis, and the prevalent idea that a circumscribed, punched-out ulcer that refuses to heal should be strongly suspected as being caused by syphilic infection has led to the treatment of the condition with iodids, with resultant cures. The case is usually diagnosed as one of cutaneous syphilis, on account of the disappearance of the lesions under the iodid treatment. Though discovered first in America, the clinical bacteriologic aspects of this disease have been worked up most thoroughly in France, and there is a large amount of French literature on the subject. De Beurmann and Gougerot have contributed most largely to our knowledge of this condition. For a full description of the clinical and pathologic findings, with special reference to the various clinical types, the reader is referred to the article by De Beurmann.[1] The disease is most widespread in the organs it attacks, but so far only the cutaneous types have been described in the United States. Several species of the sporothrix are described in the literature, the most common being *Sporothrix beurmanni*, but an attempt to classify an organism which has been isolated, guided by the published descriptions, makes one agree with Meyer and Aird[2] in their conclusion that *Sporothrix schenckii* and *beurmanni* are of the same species, which is best called *Sporothrix schenckii-beurmanni.*



Four day culture on hanging-drop of 2 per cent. glucose agar. Outline drawing of actual microscopic field.

REPORT OF CASE

The case of sporotrichosis that is responsible for this note occurred in a patient from Winner, S. D. He was a Russian laborer, aged 33 years. He appeared at the dispensary of the Creighton Medical College for treatment. He gave the following history: About three weeks before appearing for treatment the patient noticed a small nodular swelling in the neck below the left ear. It was only slightly tender. Soon there appeared on the left side of the face from the bridge of the nose to the angle of the mouth, several similar swellings. These gradually became soft but caused only very slight pain. He complained of attacks of epistaxis and obstruction to nasal breathing. The patient stated that he had been caring for horses for the past few months, and that about four weeks before he became sick, the horses had been affected with a throat condition that he thought was glanders, though a clear history of the affection of the horses could not be obtained. The patient knows of no injury that he received that might have served as a point of entry for the sporothrix. The rest of the history is irrelevant.

Physical examination showed a patient apparently in good health. Below the left ear in the neck was a subcutaneous nodule about 1 cm. in diameter. There was moderate edema of the left eyelids. On the left side of the nose in the skin and involving the subcutaneous tissue was a swelling 3 cm. in diameter. It was soft in the center with an indurated periphery. Close to this on the side of the face were two similar nodules. They were about 2 cm. in diameter, hard at first but softening in the center in three or four days. After a few days similar nodules occurred at the angle of the mouth, and there appeared a submaxillary lymph node about 1 cm. in diameter. The nodules were purplish-red, elastic, with fluctuating centers and indurated edges, and were only slightly tender.

A clinical diagnosis of glanders was made and the patient was sent to the bacteriologic laboratory for cultures. The fluctuating lesion on the side of the nose was aspirated and about 1 c.c. of thick gelatinous pus obtained. Smears of this failed to show organisms. The pus was inoculated onto Loeffler's coagulated serum medium, blood agar, glycerin agar, and 2 per cent. glucose ovarian cyst broth. On the fourth day there appeared on the Loeffler's medium scattered small whites colonies which later became thickly wrinkled and leathery. In the broth there were tiny white cotton-like flakes lying on the bottom, with clear supernatant fluid. Smears from the solid mediums showed large numbers of oval spores with an occasional thread of mycelium. Some of the masses fished from the broth were tangled balls of mycelium which were divided by septa. In the meshes were numerous spores, some of which were attached to the sides of the mycelium by a fine stem. The organism stained deeply with the usual dyes and was Gram amphophile. The spores contained an eccentric and nonstaining refractile body. Subsequent transfers of the organism showed the best growth on 2 per cent. glucose agar. The growth in transplants appeared in forty-eight hours, at first as isolated white colonies, which later became thickened and leathery, and in from ten days to two weeks began to develop brown or black pigment. The growth tended to penetrate the surface of the medium, so that the medium was torn on removing any of the growth. In some cultures the growth remained finely granular, not developing the leathery appearance. In these the growth was confined to the surface of the medium. Attempts at anaerobic cultures were unsuccessful. The organism grew equally well at room or incubator temperature.

The development of pigment was variable. In some cultures none at all was formed. None was formed if air was excluded from the tube after the growth was obtained. In some tubes the color was uniform, being any shade from a light brown to a black, while in other tubes the surface was mottled. The advancing edge of the growth often was white while the center was deeply pigmented and this pigment was in the spores. Davis[3] has succeeded in obtaining pigmented and nonpigmented strains by securing his material for transplants from corresponding areas in the growth. These strains have remained true after many transplants and after animal passage. In the first two or three weeks the surface of the growth was shiny and moist, but after prolonged growth it was usualy covered by a fine powder due to spores on aerial branches. In cultures of several months' standing large oval

* From the Bacteriologic Laboratory of the Creighton Medical College.

1. De Beurmann: Sporotrichosis, Brit. Med. Jour., 1912, **2**, 289.
2. Meyer, K. F., and Aird, J. A.: Differentiation of Sporotricha by Fermentation, Jour. Infect. Dis., 1915, **16**, 399.
3. Davis, D. J.: Chromogenesis in Cultures of Sporotricha, Jour. Infect. Dis., 1915, **17**, 174.

bodies two or three times as large as the usual spores were found (chlamydospores?).

Cultures on hanging-drop agar showed the mycelium to branch irregularly, the spores springing from the sides by slender stems or grouped around the ends of the branches as pictured in the illustration.

This case adds another one from the Missouri Valley, where, according to Reudiger,[4] by far the largest number has been found.

Unfortunately the patient disappeared about the time the cultures were obtained and efforts to locate him were unsuccessful.

CANCER OF THE RECTUM AND THE PELVIC COLON

STATISTICAL AND CLINICAL REVIEW OF FOUR HUNDRED AND NINETY-ONE CASES *

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I have seen to date 491 cases, which my associate, Dr. Giles, has tabulated (Table 1). Fifty-one patients died and 253 recovered, a mortality of 16 per cent. for

TABLE 1.—ANALYSIS OF FOUR HUNDRED AND NINETY-ONE CASES

	No.
Males	281
Females	210
Nature of Disease:	
Adenocarcinoma	451
Epithelioma	15
Colloid carcinoma	4
Scirrhous carcinoma	4
Round cell sarcoma	5
Melanosarcoma	5
Lymphosarcoma	4
Spindle cell sarcoma	3
Patients operated on	344
Radical excision	304
Simple abdominal section	20
Combined operation	111
Operations in one stage	75
Operations in two stages	36
Perineal	102
Kraske operations	20
Operations by modified bone flap method	32
Intrarectal operations	18

radical excision. The remaining forty-one cases not included in the series were colostomies and palliative operative procedures for inoperable cases.

I feel very strongly that early colostomy in inoperable cases is as vital to the patient as early operation in operable cases. And I further feel that it is a great injustice to put off this operation until the patient is moribund. If colostomy is indicated, it certainly should be performed before the individual has become so weakened by the disease that the operation will be of no benefit.

There are so many inherited misconceptions with regard to cancer, and they are so firmly rooted in the minds of the laity, that it will require a long time to dislodge them. Reeducation is essential if we wish to progress. Textbooks on surgery, except the more recent, lay stress on age, pain, cachexia, loss of weight, and tumor as the cardinal symptoms of cancer. This is very misleading. Cancer knows no age; 0.5 per cent. of these cases are in children under 9 years of age; 2.5 per cent. of the patients are under 19, and in my personal experience 7 per cent. were under 30 and 9 per cent. were between 30 and 35 years of age.

The symptoms mentioned in the textbooks are those associated with the last or inoperable stage of cancer. Many of these patients seen by us had had unmistakable symptoms of the disease for over a year, although some of them had gained in weight.

The average duration of symptoms before admission is just over 8 months.

TABLE 2.—AGE OF CANCER PATIENTS

	No. of Patients
Under 20 years	4
Between 20 and 30 years	32
Between 30 and 40 years	66
Between 40 and 50 years	117
Between 50 and 60 years	136
Between 60 and 70 years	91
Between 70 and 80 years	21
Over 80 years	7
Not stated	17
Total	491

Cachexia seldom appears until cancer is far advanced, and then principally in old persons and in those with cardiovascular diseases. One does not often associate pain with cancer of the rectum, except as a terminal symptom, and when the tumor is situated adjacent to the anus. In rectal malignancy the tumor can usually be felt with the finger, and on this examination alone a diagnosis can be made; but when the disease is situated in the sigmoid or the colon, the diagnosis is made in the former by means of the proctoscope. In the latter case, I admit that many difficulties are encountered in arriving at a conclusion. However, the roentgen ray and the natural inhibition usually associated with malignancy, together with the presence of blood in the stool and the reaction of occult blood, afford material aid in differentiating benignancy from malignancy. Except in advanced cases, an abdominal cancer can very seldom be felt, and then only in patients with a relaxed abdominal wall. Frequently, when a mass is found, it is an accumulation of fecal matter above the site of the growth, and not the tumor.

It is fortunate for the individual if this accumulation of fecal matter occurs early, as then, at operation, the malignancy is recognized. The late Dr. William Bull told me that he believed the day was not far distant when the public would be so educated as to accept exploratory laparotomy in every instance in which there is doubt. He lamented the difficulties he

TABLE 3.—LENGTH OF TIME SYMPTOMS OF CANCER HAD BEEN APPARENT

	No. of Patients
Under 4 months	54
From 4 to 6 months	87
From 6 to 9 months	99
From 9 to 12 months	102
From 12 to 18 months	42
From 18 to 24 months	45
From 24 to 30 months	14
From 30 to 36 months	8
Over 3 years	3
Not stated	37
Total	491

encountered in trying to convince patients that this was the proper course to pursue. If we could only remove from the minds of our patients preconceived notions of the immodesty of a rectal examination and insist on this in every case, many tumors would be discovered in their incipiency. Especially must we eliminate malignancy in cases in which there are constipation, diarrhea, hemorrhoids and loss of blood.

When it is realized that 10 per cent. of my patients had had an operation for hemorrhoids within a few

4. Reudiger, Gustav: Sporotrichosis in the United States, Jour. Infect. Dis., 1912, **11**, 193-206.

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

months of the time when I first saw them and that they might have been spared the suffering which followed those operations, we must feel convinced of the necessity of being thorough, and conclude that hemorrhoids are all too often the symptom of a worse malady.

Twenty per cent. of these patients had an incorrect diagnosis and were treated for stomach and enteric disease, when, in reality, they were suffering from a malignancy remote from these organs. It is well known that esoteric stomach symptoms are very misleading, but here again we are confronted by the lack of thoroughness.

We should make it a rule, no matter in what branch of medicine or surgery we specialize, to see that every patient referred to us has the thorough examination to which he is entitled. One fails to be thorough if one overlooks anything, and is guilty of neglect toward that patient.

Dr. John B. Murphy's advice to me, when I started to practice, was to examine every patient thoroughly, and if he refused such an examination, to decline to treat him. Nicholas Senn, on so many occasions, reiterated the necessity of a digital examination that I am sure most of his students followed his advice.

Many cases of carcinoma of the rectum are turned down as inoperable without due consideration. This decision is often influenced by the high mortality in the hands of some surgeons. Also, because in the past, a large tumor mass with the involvement of some unimportant structure was considered as a contraindication to a radical operation. I recall several instances in which this decision influenced the surgeon. But we should remember that cancer here remains stationary for a very long time, that the patient is facing certain death unless some effort is made to eradicate the growth, and that even if the patient should die in the attempt to save him, he is at least spared a great deal of horrible suffering. On many occasions I have found it necessary to remove the uterus, resect the vagina, remove a portion or the whole of the prostate, resect the seminal vesicles, resect the urethra, perform a radical Wertheim operation, resect several coils of the intestine and resect the bladder wall.

TABLE 4.—RESECTIONS IN CANCER PATIENTS

	No. of Cases
Removal of a part or the whole of the prostate	20
Resection of urethra, prostate and seminal vesicles	6
Resection of bladder wall	4
Resection of a part or the whole of the vagina	14
Hysterectomy complete	9
Wertheim hysterectomy	5
Removal of one or more coils of the intestine	6

One must expect a high mortality in such radical operations; but the percentage of cures is a sufficient justification to encourage us to continue and, if necessary, to do even more radical work. Dellman, in 1916, giving statistics for cancer in the Netherlands, says, in conclusion, that the more radical treatment of cancer nowadays is curing so many patients that the day is approaching, if not already here, when the number of deaths from malignant disease will no longer be an index of the actual prevalence of cancer. This is certainly encouraging, coming as it does from one who has evidently studied the subject very thoroughly.

The choice of operation in cancer of the rectum is always perplexing, and one that cannot be decided offhand; but it is safe to say that there are four operations, any one of which, when indicated, offers a solution to the problem.

Patients very often insist on knowing beforehand whether they will be left with a hole in their side, or whether it will be possible to restore the anus to its original site. Some men, in an effort to please, make contracts that they are unable to fulfil. This is unwise. In such a vital matter, the surgeon should insist that he be given full power to do what in his judgment is to the best interest of his patient. No surgeon should tie his hands beforehand and feel compelled, because of a previous understanding, to perform an incomplete operation when a slightly more radical procedure might prevent recurrence. I myself prefer to place the anus at its original site; but I never hesitate to leave a patient with a colostomy if by so doing I can get a better result. I never consider placing the anus high up in the sacrum, or in any other situation than the original site, because I believe that a colostomy is preferable to a stoma in any other than the normal position.

I agree with the surgeons who state that perfect continence can never be attained by attempts at restoration of the intestine to the normal anal site. Yet I have so many cases in which patients have enjoyed great comfort with this imperfect continence that I am convinced that this operation has a place in surgery.

Everything being relative, this applies with equal force to incontinence; and I feel confident that if a census could be taken of patients with relative continence, after a radical operation of the rectum, none of them would be willing to have a colostomy, in preference to a relative continence, with the anus in its normal situation.

My operation of choice is the combined operation, with the anus in its normal site in the perineum. This gives one the advantage of being able thoroughly to explore the abdomen. I know from experience that the under and diaphragmatic surfaces of the liver are first involved, and that only by abdominal exploration can this be determined. There are other advantages, namely, that one can perform a practically bloodless operation, and remove all the interglandular tissue and fat with a minimum of traumatism.

It is my custom, whenever possible, to block the sympathetic by the combined extradural and hypogastric anesthetization, as I feel that, by this method, shock, which is a bugbear to all surgeons in this operation, is obviated. I suggested to Dr. Halstead that this procedure accounted for my better results since I have followed it; but he seemed to think that it was due rather to a more perfect technic than to the combined blocking. Still, I nevertheless feel a good deal like the surgeons of the old school after they had washed their hands in mercuric chlorid, that it is at least a step in the right direction, adds no risk to the operation, and is in keeping with modern thought. The work of Crile confirms me in my belief, and so long as it does not add to the danger or the length of the operation, it seems well worth while.

The fact that a perineal operation was performed by me completely under sacral anesthesia must convince the most pessimistic of its value as a distinct method in blocking sensory impulses.

Whether the combined operation should be performed in one or two stages can only be decided at operation, and the surgeon is guided by his own experience and judgment. Often the anesthetist becomes alarmed during the course of the operation, but the

surgeon familiar with this operation can always see the danger signal ahead. I prefer to perform the operation in one stage whenever feasible, but I am not inflexible in my judgment and never hesitate, if I feel that there is extra risk, to divide it into two stages.

The perineal operation is indicated in very fat persons and in those so debilitated that any form of abdominal exploration would be almost sure to result in death. In looking over my perineal operations, especially in that decade when this was the operation of choice, I find so many good results that it is hard to believe that this method should have such a limited field of usefulness.

Kocher many years ago pointed out that extensive glandular enlargement does not necessarily mean that those glands themselves are carcinomatous. I have had those glands examined at levels, and at various distances, from the growth, and in the majority of cases they have proved to be merely inflammatory. However, at the present date, it is much safer to explore the abdomen than to confine oneself to the perineal operation alone.

In all cases, no matter what the operation, I remove the coccyx as a matter of routine. It affords far greater room, obviates the pain that follows the operation when the coccyx is not removed, permits of thorough drainage, and adds materially to the comfort of the patient in subsequent dressings.

When the growth is situated near the anus, it seems advisable to perform a colostomy first. At the end of ten days, a wide incision is made of the tuberosities on both sides, and the growth is removed *en bloc* after the ischiorectal fossae are thoroughly cleaned out. I have succeeded in restoring the anus to its original site, and I have obtained a relative degree of continence for so extensive an operation.

I have found it to be of advantage to pack the pelvis by means of a device that has given great satisfaction from the standpoint of drainage, and has spared the patients unnecessary suffering during the removal of the gauze. No doubt this is nothing new, and has probably been used with equal satisfaction by others; but I mention it for the benefit of those who are unfamiliar with its advantages. A rubber glove, from which the upper halves of the fingers have been cut, and in which a small opening has been made in the palmar and dorsal surfaces to permit of drainage, is passed into the pelvis as tightly as necessary to control oozing and to fill up the dead spaces posterior to the bowel. At the end of forty-eight hours the gauze can be removed, the wound irrigated, if necessary, or desirable, and the glove repacked.

I have long since abandoned resection of the rectum, as early experience has taught that stricture inevitably followed. This is owing to the fact that the rectum has a terminal blood supply, and not, as is commonly supposed, to the lack of peritoneal covering. It is an axiom in pathology that the amount of connective tissue is inversely proportionate to the blood supply.

Kraske's operation has been abandoned by most surgeons, and I see very little indication for it in cancer of the rectum.

The sigmoid and cecum are two of the most variable organs of the body. The sigmoid, particularly, varies within wide limits, as in the case of Hirschsprung's disease. It possesses few lymphatics, has a dense fascial covering, and, for this reason, sigmoidal growths remain stationary for a long time. On account of its wide variation, it lends itself easily to resection.

There are many drawbacks to end-to-end anastomosis in this region, on account of the blood supply and the danger of leakage. Recognizing this, Mikulicz, Tuttle and others have suggested a three stage operation which has a low mortality, but like all safe procedures, has many inconveniences, in that the patient is incapacitated for a long time, and it may require more than one operation to close the stoma. It would also seem that the danger of metastasis would be enhanced by the subsequent handling and pressure, and by allowing the growth to remain in situ many days after the first operation.

For several years, except in cases of obstruction and in patients that are greatly debilitated, I have used the following technic: The sigmoid naturally rests in the iliac fossa, and this can be taken advantage of to make a lateral anastomosis between the two limbs of the sigmoid. The mesentery should be tied as in the Mikulicz operation. Both legs of the sigmoid are then brought together by a peritoneal suture on the inside. The intestine is mobilized toward the center, the pelvic and small intestines being carefully walled off. Following this, an anastomosis is made on the outer side of the parallel limbs. After the anastomosis has been completed, the sigmoid is allowed to fall toward the iliac fossa and is sutured to the parietal peritoneum, dorsad, cephalad and caudad. A small cigaret drain is placed above and below the anastomosis, and the abdominal wound is closed, except for the skin. Both limbs are double clamped, and the growth is removed with the cautery. After this the ends of the bowel are inverted, and the skin is closed in the usual manner. If leakage should occur it will be practically shut off by the two walls of the peritoneum. If there is any trouble with the anastomosis, the skin is opened up, and the cephalad portion of the bowel is opened and drained.

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ABSTRACT OF DISCUSSION

DR. GEORGE B. EVANS, Dayton, Ohio: I have never seen a patient with carcinoma under 55 years of age. In cases in which the pelvis is much involved—by that I mean the vagina, uterus, ovaries and tubes, seminal vesicles, prostate and posterior urethra—I believe we should not extirpate or resect. Although we may give our patients temporary relief, their secondary sufferings are greater. I have never used the cautery because I feel it is better for me to have my finger up in the wound.

As Dr. Lynch has said, the question of diagnosis is by far the most important in these cases, and we should make it with the aid of the proctoscope, sigmoidoscope and roentgenogram. We should never operate in any case of carcinoma until we have given the patient's kidneys a thorough consideration. We should never operate on these patients until we have brought the phenolsulphonephthalein test to our aid. In the first ten years of my work, nearly all of my cases were operable, as I thought in those days. In the last ten years I do not think that in all the cases I have seen 10 per cent. were operable. I find that all the organs in these cases are involved. Therefore, and in conclusion I wish to emphasize that I believe we are going back to where we were, so far as the good of the patient is concerned—back to colotomy.

DR. FRANK C. YEOMANS, New York: Every one in speaking of cancer of the rectum and cancer of the colon emphasizes early diagnosis, saying that if the surgeon gets the patient early enough he will cure him, no matter where the

cancer is. Then they urge that we examine the patients carefully. I think all this is very good precept and practice; but many men who have been practicing for years never examine patients carefully. They do not take postgraduate medical courses, and they were not taught in the undergraduate schools the method of making a routine examination. The only way that we can hope to succeed in this, I believe, is to have courses of instruction in enteroproctology introduced into the undergraduate medical schools and make this a compulsory part of the curriculum, so that a student may become familiar with the average pathology of the bowel and know how to use the ordinary instruments of precision. Then, if he cannot interpret the findings, he will, at least, have the wisdom to confer with some one competent to make the diagnosis before the disease has progressed to a stage where it is beyond relief. Until that time the entire profession will not receive adequate instruction, cancer of the bowel will not be recognized early, nor will the patient receive the benefit of early operation.

DR. WILLIAM M. BEACH, Pittsburgh: I should like to ask Dr. Lynch the tenure of life following these cases.

DR. DWIGHT H. MURRAY, Syracuse, N. Y.: The microscope does not tell us the histologic factor. This may seem strange. I will explain by saying that in the examination of the cancer tissue removed, the pathologist will say that all of the growth has been removed and that the microscope does not show any cancerous tissue on the outside of the growth. In my opinion the microscope cannot show tissue which has been invaded and which has not yet shown pathologic changes that the microscope will reveal. I saw this thoroughly demonstrated in a case in which operation was performed a year ago.

DR. JOHN L. JELKS, Memphis, Tenn.: I am so pessimistic with regard to cancer of any part of the alimentary tract that I feel almost inclined to offer a resolution that it would be the sense of this assembly that late radical operations for cancer of the stomach and intestines are hardly warranted. I have operated and operated for cancers of the stomach, colon and rectum and the patients are all dead, or, if not already dead, going to die a little bit later of cancer of the liver. What is the use? I think it is best to turn the patients down. A number of men have said much could be done if we have "early cases." In the "early cases" the patients will not dream of having an operation and in the late cases we should not dream of operating.

DR. LOUIS J. HIRSCHMAN, Detroit: I hope this paper will go out as a message from the enteroproctologist to the general surgeon and everybody doing surgery, to mark the passage of mutilating operations for the excision of a cancer; that the day of the sacral anus is over. I think the time has arrived when we must tell the profession at large that if they cannot do anything else than colostomize and implant the anus anywhere but at its normal site, they had better do nothing.

DR. JEROME M. LYNCH, New York: I am really sorry that my friend Dr. Jelks feels as he does; it is very unfortunate, for Dr. Jelks has many friends and a large following and the result will be that a great many patients with cancer who should be operated on will not be operated on. The statistics of Mayo and other men show that a great deal has been done in cancer.

Dr. Beach asked me for the tenure of life in these cases. Twenty-six per cent. of the patients are alive after three years (all these statistics will be published); two or three over sixteen years. When the average patient comes for operation he is over 50, and if he lives sixteen or seventeen years, he is going about the limit. So far as I can see, the results are very encouraging, and notwithstanding the pessimistic view taken by some surgeons, I shall still continue to perform these operations, and it will just mean holding the same position now that Samuel Sharpe held in 1820. Then he said, "Some men are so pessimistic about operation for cancer that they would rather let the patients die. In my own personal experience I have saved so many patients that I shall still continue to operate." It is almost 100 years since that time and we have the same obstructive pessimism to contend with.

MIXED INFECTION WITH THE PNEUMOCOCCUS IN EPIDEMIC MENINGITIS *

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In a recent communication, Netter and Salanier[1] report twenty-two instances of epidemic meningitis in which pneumococci as well as meningococci were found in the spinal fluid. These cases of mixed infection exhibited all the symptoms of meningococcic meningitis, but did not respond to serum treatment and terminated fatally. It is my purpose to call attention to the importance of these observations, and to report an example of this type of meningeal infection.

W. D., a boy, aged 7 months, entered the Cook County Hospital, Sept. 28, 1917, with all the physical signs of meningitis. According to the mother, the illness began suddenly two days before with convulsions, vomiting, stiffness and retraction of the neck, and a staring expression of the eyes. Otherwise the history was negative. The noteworthy physical findings were blindness, marked opisthotonos, orthotonus, and a positive Kernig's sign. The temperature was 103 F. and the pulse rapid and weak.

The spinal fluid was under increased pressure, opalescent, and contained 1,000 cells per cubic millimeter, 98 per cent. of which were of the polymorphonuclear type. Gram-positive and gram-negative intracellular and extracellular diplococci were present in the stained smears. The urine contained a trace of albumin and an occasional leukocyte, and the Wassermann test was negative. During the twenty days in the hospital, 185 c.c. of antimeningococcus serum were given intraspinally with no results. The temperature remained high and the child gradually became weaker and died, Oct. 18, 1917. A necropsy was not made.

During the course of the disease two bacteriologic examinations of the spinal fluid were made. In each instance a gram-negative and a gram-positive diplococcus were found in the cultures. The gram-negative organism had all the morphologic and cultural characteristics of the meningococcus, and was agglutinated by a polyvalent antimeningococcic serum in a dilution of 1:800. The gram-positive diplococcus was found to be a typical pneumococcus of Group I type. In the plate cultures of the spinal fluid in both instances, the meningococcus colonies were more numerous than the pneumococcus colonies. The spinal fluid had a faint greenish tint, and at no time was markedly purulent. Precipitin tests of the spinal fluid, in which the specific serums for both organisms were used, yielded negative results.

These observations emphasize the importance of frequent cultural examinations of the spinal fluid in all cases of epidemic meningitis, especially those in which antimeningococcus serum does not prove efficacious. Furthermore, they indicate that mixed infection may occur in meningococcic meningitis as in other infectious diseases, and exert an unfavorable influence on the clinical course. In the instance of mixed pneumococcus and meningococcus infection, combined serum treatment, as advocated by Netter, would be indicated. In regard to the general significance of this new observation in epidemic meningitis, it is sufficient to say that the importance of mixed infection in acute infectious diseases cannot be overestimated. The presence of two virulent organisms in the same pathologic lesion must not be neglected on the basis that one is a secondary invader; the activities of each organism must be reckoned with in the treatment.

* From the Memorial Institute for Infectious Diseases.
1. Netter and Salanier: Bull. et mém. Soc. méd. d. hôp. de Paris, 1917, **41**, 789.

Military Medicine and Surgery

SHELL-SHOCK*

A DIGEST OF THE ENGLISH LITERATURE

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In the last three years, the neurologists and psychiatrists of the United States have viewed with interest the reports that have come to us from abroad regarding the remarkable war neurosis, shell-shock. While these papers excited our interest, it was not until our country entered the war that the problem became one that demanded our serious attention. At the present time, however, we ought to be fully acquainted with the data already accumulated by foreign workers in the three years of war; to be able to give successful treatment in the many cases that are sure to arise in our armies and, vastly more important, to gain a clear insight into the condition so that we may be able to exclude from our draft army at the time of enlistment the men most liable to shell-shock, and thus prevent "the wastage of the recruiting office," which has been such a burden to the European countries.

Moreover, the importance of the problem cannot be overemphasized. Osler,[1] in a recent communication, speaking of the neurasthenic as he appears at the recruiting station, says that the unfit should be checked at the recruiting office and kept at home; "the trenches is no place for a man with unstable vasomotors. In the strain of war they break like dry twigs and become a heavy burden in the hospitals and convalescent homes."

June 1, 1917, Dr. Thomas W. Salmon, in a letter to the National Committee for Mental Hygiene, wrote from London in regard to the shell-shock cases:

> The extent of these casualties is almost beyond belief. I have not yet had access to the official records, but apparently the neuroses constitute one of the most formidable problems of modern war. These people are certain to go to pieces in the presence of danger or hardship, and are not only useless to themselves but are also a serious drag upon their comrades and the army in general.

When one sees, also, the vast number of these patients collected in England in the various special hospitals devoted to their treatment, one cannot but realize that, if we, in this country, could only prevent such wastage, our work would be of inestimable value to the government. Therefore, in view of the importance of this problem, one feels fully justified in bringing to notice the work already done on the subject by British neurologists and psychiatrists.

SHELL-SHOCK

The term "shell-shock" came into use in the English army the latter part of 1914, but the first reported cases that I have been able to find in the English literature were by Myers[2] in February, 1915. He reported three cases under the term "shell-shock" with loss of memory, vision, smell and taste. He expresses the opinion that his cases "appear to constitute a definite class among others arising from the effects of shell-shock." Even at this early date it was found that the term "shell-shock" was a very loose one, and that many of the patients coming back from France to England in this group had never been "shocked" by the concussion of a shell, but had been buried under débris when the shell exploded; in some cases the patients had never been under shell fire at all. March 27, 1915, the *Lancet*, in an editorial, commented on the effect of shell explosion on the central nervous system, especially in its relation to the special senses, and thought that most cases would fall into one of three classes: fatigue-paralysis, "commotio," or traumatic hysteria. In other words, the numerous cases with protean symptoms of nervous disorder were being thought of from the etiologic standpoint, and the neurasthenia and hysteria cases were being separated from those of supposed commotion or concussion with probable organic brain changes due to trauma.

It was not, however, until February, 1916, that we had the first clear classification of the shell-shock cases. Mott,[3] the London neuropathologist, in a series of lectures on "The Effects of High Explosives Upon the Central Nervous System," divided his cases into three groups from the pathologic point of view:

1. The immediately fatal.
2. The wounded with injuries to the central nervous system.
3. The traumas to the central nervous system without visible injury.

The last group, according to Mott, forms the true shell-shock cases. Thus, from the pathologist's point of view, all cases are "commotio" with or without visible injury to the central nervous system. Shell-shock, however, as seen from the practical clinical point of view, includes all functional or obscure neurologic cases. In many cases now grouped as shell-shock, the patients have never been within the zone of active warfare. Henry Head,[4] in a protest against the use of the term "shell-shock," is quoted as having said that it represented "a heterogeneous collection of different nervous affections, from concussion to sheer funk, which have merely this much in common, that nervous control has at last given way. To me it would be just as reasonable to sweep up the various fruits which fall from the trees in a strong wind and then to discuss them without first stating that some fell from an apple and some from a pear tree."

A workable classification from the clinical point of view is that of Buzzard[5]:

1. Pure exhaustion cases. These were quite common in the early part of the war, but are rarely seen now.
2. Neuropaths and psychopaths, who develop shell-shock symptoms very early and quickly.
3. Martial misfits; the "objector," who hates war but goes because he must and often malingers.
4. Concussion cases.
5. Cortical injury, a few of which get into the shell-shock group by mistake.
6. Cases of hysteria who show the major and minor symptoms of hysteria as in civil life.

From this brief outline on classification and definition, it can readily be seen that the term "shell-shock"

* Read at the staff meeting, Boston Psychopathic Hospital, Oct. 17, 1917. The contents of this paper are based on observations made in England from May, 1916, to February, 1917, under grant of a Moseley Traveling Fellowship from Harvard University. Indebtedness is acknowledged to Sir William Osler and Dr. Frederick W. Mott for their kindness in making these observations possible.

1. Osler, Sir William: War Wastage: A Note of Warning to Examiners of Recruits, THE JOURNAL A. M. A., July 28, 1917, p. 290.
2. Myers: Lancet, London, 1915, **1**, 316.
3. Mott, F. W.: Lancet, London, 1916, **1**, 331, 441, 545.
4. Head, Henry: Lancet, London, 1916, **1**, 306 (quotation).
5. Buzzard: Lancet, London, 1916, **2**, 1095.

is a blanket diagnosis to cover all the traumas and disorders of the central nervous system without visible injury, occurring in modern warfare. The term is a poor one, and Eder,[6] in his latest book, has used the title, "War-Shock: The Psycho-Neuroses in War." He markedly limits himself, however, by defining, "war-shock" as "hysteria occurring in a person free from hereditary or personal psychoneurotic antecedents, but with a mind more responsive to psychical stimulus than the normal." Such a narrow definition seems to me unpractical, as many cases other than these must be treated as shell-shock in hospitals devoted to the care of the neuroses of the war. An expression much employed lately is "war-strain," but this is lacking in not emphasizing the dominant rôle of the central nervous system. As shell-shock is now so widely used, it does not seem practical to change it. G. Elliot Smith[7] did not use either "war-strain" or "war-shock" in his book on "Shell-Shock and Its Lessons," and preferred "shell-shock" "as a popular but inadequate title for all those mental effects of war experience which are sufficient to incapacitate a man from the performance of his military duties." A new and excellent classification by Hurst[8] is too long to reproduce here. It is, by far, the best one that has been made.[9]

PREDISPOSING CONDITIONS TO SHOCK

It has been found that in a large majority of cases of shell-shock the patients have a neuropathic tendency or inheritance. Some of Mott's patients "gave a history of either previous nervous breakdown or of a timid disposition, easily frightened, emotional, or afraid of the sight of blood; in a few, the fact was elicited that they had a fright in early childhood and that this recurred in dreams." In a case reported by Feiling,[10] the boy ran away from school at 13 because he was "tired of it," and also worked at various trades, at none of them apparently with any very marked success. In one of the best of the articles on shell-shock, Forsyth[11] says, "In all cases coming under the writer's notice with symptoms which were more than mild and transitory, a history of some earlier nervous trouble, slight or severe, was forthcoming." In twelve consecutive cases the following notes were elicited:

Nervous breakdown two years before.
Highly nervous and irritable.
Often depressed; worries over things.
Longish periods of depression.
Always been shy; still shy, though middle-aged.
Nervous breakdown four years ago.
Self-conscious.
Very depressed; worries unnecessarily.
Of nervous temperament.
Intensely self-conscious; married, but sexually impotent.
Highly strung and excitable since a child; violent tempered.

Later Forsyth says, "The occurrence of a definite neurosis is to be looked for only in psychopathic individuals, the onset representing the collapse of what is already psychically unsound."

Adrian and Yealland,[12] in a report on 250 cases, say:

There are certain mental abnormalities which are present to some extent in nearly every patient. The majority of patients are below the average normal intelligence as judged by the Binet-Simon scale, and others who are more highly equipped prove to have an unstable history either personally or in the family.

Mott[13] again insists:

Of even greater importance than the extrinsic conditions in the causation of military unfitness from exposure to shell fire are the intrinsic conditions, for if there is an inborn timorous or neurotic disposition, or an inborn or acquired neuropathic or psychopathic taint, causing a *locus minoris resistentiae* in the central nervous system, it necessarily follows that such a one will be unable to stand the terrifying effects of shell fire and the stress of trench warfare.

CONDITIONS AT THE TIME OF SHOCK

The conditions in the front-line trenches that put the soldier's nervous system "on edge" and sometimes are the sole factor in causing a war neurosis are intimated in a letter from an English officer to his mother, telling of his first experiences under shell fire:

The shelling all day was awful. Before I had been in the trench three minutes, a bit of shrapnel made a clean cut in my breeches, only scratching the skin. The sights were awful, dead men all over the place, some half buried by shells. The ground and trenches had all been flattened out by our artillery fire, so there was hardly any shelter. I told the men to scratch themselves in with their entrenching tools, but it was simply a case of looking death in the face and waiting to be hit. Never for a moment did I expect to get out alive, as the shrapnel rattled all day long on my helmet, and of course the Boche might have counterattacked at any time. Many men got buried and had to be dug out. It was dreadful to see men's nerves give way and a man of 40 whimpering like a child and crying his soul out. Very catching this disease too, so I had to send him back. I never got into a smaller ball than I did that day, and of course the sights next one made eating impossible. When night came nerves got even worse, and there was hardly a man who was not shivering like a leaf. That day and night was a nightmare. It is the only time I ever felt the sweat of fear, but then it dropped off me in one continuous stream, as I thought in the dark my nose was bleeding.

From the foregoing note one gets a slight idea of active trench warfare. Mott[13] expresses it in this way:

It must be obvious that through all the sensory avenues, exciting and terrifying impressions are continually streaming to the perceptual centers in the brain, arousing the primitive emotions and passions, and their instinctive reactions. The whole nervous system, excited and dominated by feelings of anger, disgust, and especially fear, is in a condition of continuous tension; sleep, the sweet unconscious quiet of the mind, is impossible or unrefreshing because broken or disturbed by terrifying dreams. Living in trenches or dugouts, exposed to wet, cold, and often (owing to shelling of the communicating trenches) to hunger and thirst, dazed or almost stunned by the increasing din of the guns, disgusted by foul stenches, by the rats and by insect tortures of flies, fleas, bugs and lice, the minor horrors of war, when combined with frequent grim and gruesome spectacles of comrades suddenly struck down, mangled, wounded, or dead, the memories of which are constantly recurring and exciting a dread of impending death or of being blown up by a mine and buried alive, together constitute experiences so depressing to the vital resistance of the nervous system, that a time must come when even the strongest man will succumb, and a shell bursting near may produce a sudden loss of consciousness, not by concussion or commotion, but by acting as the "last straw" on an utterly exhausted nervous system, worn out by this stress of trench warfare and want of sleep.

6. Eder: War Shock, London, William Heinemann, 1917.
7. Smith and Pear: Shell-Shock and Its Lessons, Manchester, England, 1917.
8. Hurst: Guy's Hosp. Gaz., 1917, **21**, 109.
9. Mental Hygiene, 1917, **1**, 468.
10. Feiling: Lancet, London, 1915, **2**, 63.
11. Forsyth: Lancet, London, 1915, **2**, 1399.
12. Adrian and Yealland: Lancet, London, 1917, **1**, 867.
13. Mott, F. W.: Brit. Med. Jour., 1917, **2**, 39.

Forsyth[11] lays special stress on "the ghastly sights of carnage":

These shake the self-control of all but the very strong, and when, as must often happen, a man sees his best friends killed or horribly mutilated, the anguish of his own feelings may unnerve him beyond control, even though, curiously enough, the effects may not be felt for hours or even days after.

From the psychologist's standpoint, the situation is interesting:

At the time of the trauma, whether it is concentrated in a few moments or spread over days or weeks, the situation to be met derives its psychical importance from the fact that it involves the risk of death. Against this, the instinct of self-preservation rebels, employing as its weapon the powerful emotion of fear. And this, it is not superfluous to recall, is a natural emotion, and therefore ineradicable; its function, like that of its physical counterpart, pain, is protective, dictating an immediate flight from the danger arousing it. In face, therefore, of the prospect of sudden death, fear strains all its powers to enforce an escape, and it can be coerced only by a still more powerful effort of will.[11]

Just what happens at the precise moment of the shock is best shown by quotations from a few case histories. In one of Myers'[2] cases, the patient was not feeling afraid but "rather enjoying it" until the shells burst about him. While creeping under wire entanglements, some shells burst near him. "As he was struggling to disentangle himself from the wire, three more shells burst behind and one in front of him. Immediately after the shell had burst in front of him, his sight became blurred. At the same moment he was seized with shivering, and cold sweat broke out, especially round the loins." Another patient "was blown off a heap of bricks 15 feet high owing to a shell bursting close to him." Pemberton[14] relates the case of a sergeant of a battery of field artillery: "His gun was No. 1. A direct hit was made on No. 2 gun with a high-explosive shell, killing three men. I saw Sergeant ——— shortly afterward, and although naturally excited, he appeared otherwise normal. He went on working his gun until dawn next day, when he collapsed and was found lying across one of the disemboweled corpses." In Feiling's[10] case, a trench in which the patient was fighting was blown in and he was buried for twelve hours in a mass of mud and débris. Mott[3] gives the history of a captain as follows: "His whole company had been destroyed, and, while talking to a brother officer, the latter had half his head blown off by a piece of a shell." Another patient said: "There was something dropped into the trench. I think it was a shell. I felt myself go up into the air, but I cannot remember falling."

Forsyth[11] gives the following case to show how light trauma may be:

The patient, after being for some weeks in France, where his battalion was completing its training, spent two nights, which were quiet ones, in reserve trenches. The following day, as his platoon was moving to the rear, a shell exploded close by, wounding several men, but killing none. He himself was unhurt, though he thinks some earth thrown up by the explosion may have struck his right arm. At any rate, on getting back to his billet, he found his right hand was weak, and the next morning he had lost the use of the right arm. When examined three weeks later, the limb was found to be paralyzed and showed marked involuntary movements, which had spread to the shoulder and right side of the neck. No organic cause of the condition could be found. Three months later the movements had ceased, but the arm was still weak.

14. Pemberton: Lancet, London, 1915, **1**, 967.

RESULTS OF SHOCK: SYMPTOMS

1. *Loss of Consciousness.*—Most patients lose consciousness at the time of the shock, but many are only dazed or stuporous. The ones that die are usually unconscious from the time of shock. A condition of automatic wandering, like the fugue of an epileptic so vividly described by Marie, has been observed in some cases. Parsons[15] says, in a typical case "consciousness is lost for a variable time, but often not so far as to prevent automatic movements, so that the man may walk in a dazed condition to the dressing station."

2. *Amnesia.*—One of the most common symptoms of shell-shock is amnesia, or loss of recollection. Very few patients lose consciousness for anything but a short time, and the memory of many of the events during most of the period of trauma may be brought out in various forms of treatment. The temporary amnesia may be very severe and even complete. Mott[3] gives the history of a man who was blown up by a shell and who could not recollect any recent or past events. He did not recognize any coins or even his own written name. He rapidly improved and recovered completely. One of Myers'[16] cases is an example of retrograde amnesia:

A private was found wandering in a neighboring village, clad only in his shirt and socks. "He was unable to give his name, regiment, or number. He thought his age was between 20 and 30. I tried him with various Christian names, but he replied that none of them seemed familiar to him. He could remember two men finding him as he was strolling on the outskirts of a village, and could describe everything that had occurred to him since then. There was no means of identifying him, and his past was a complete blank; he could recall nothing, for instance, of the events of his childhood."

Mott[3] gives another remarkable case, the treatment of which I shall give later in this paper. He writes:

The patient's mind was a complete blank, and this condition was reflected in a dazed, mindless, masklike expression. When asked where he lived, he said, "W——"; he did not know it was in the West Riding. He did not know the address of his home; and when shown a letter from his father with the address on the top, he did not recognize it or his father's handwriting. When shown a photograph of his home, with a group of his father, mother, and three brothers in front of it, he maintained the same wondering, dazed expression, and failed to recognize the nature of the picture. His father had heard from a comrade that he had been buried by the explosion of a shell in the trench; that he had been unconscious for some time and lost his speech.

3. *Motor and Sensory Changes.*—Paralysis and disorder of gait are common symptoms. In 250 cases with some objective disorder, Adrian and Yealland[12] found 37 cases of monoplegia of the arm or leg, 46 of paraplegia, 16 of hemiplegia, and 18 of disordered gaits. The suggestion of an external injury is usually found in the history of these patients. The man who has fallen on his shoulder will have a monoplegia of the corresponding arm. Injury to the back often precedes paraplegia. The reflexes are normal or there may be an increase in knee-jerks with a spurious ankle-clonus. I cannot find that a positive Babinski sign has been reported in a purely functional case. The overaction of antagonistic muscles is quite remarkable, especially noticed in relation to gait. Batten[17] relates a case as follows:

When first admitted and asked to walk, the patient grasped the top of the crutches and pulled the body up by the strength

15. Parsons: Lancet, London, 1915, **1**, 697.
16. Myers: Lancet, London, 1916, **1**, 65.
17. Batten: Quart. Jour. Med., 1915-1916, **9**, 73.

of his arms; he then placed each crutch alternately forward, allowing the whole weight to fall on the advanced crutch, and would advance the legs synchronously with the crutch. Later, when taught to walk in the walking-machine, he would support the weight of the body on the hands, dragging the hindmost leg forward against a resistance produced by placing all the antagonistic muscles into forcible contractions. At a later period he walked without the machine, but with the hinder leg as if it were glued to the ground, from which it could only be moved by the most violent tugging efforts.

The direct opposite of the glued-to-the-ground foot is the dancing tremor, in which the patient walks as if the legs were on springs of coiled wire.

The paralyses differ in no way from the hysterical paralyses of civil life. Extensive paralysis is the usual thing, a whole arm or leg. They are often associated with sensory changes. Myers[18] has made a special study of these, finding various disorders of cutaneous sensibility in about 25 per cent. of his patients. Mott[3] found in severe cases of shock "loss of sensibility to all forms of stimulus, pricking, heat and cold, and touch, also of deep sensibility, pressure of muscles, movement of joints, and bone sensibility to vibration of tuning-fork. Hyperesthesia is even more common than anesthesia, and even the lightest touch gives rise to apprehension and movement of withdrawal in severe cases."

Tremors and coarser rhythmic spasmodic movements are an extremely common symptom. Mott[3] gives an example of a gunner blown up by a big shell who was amnesic for fourteen days. He says: "When I examined him he was sitting in a chair; legs, hands, and jaw were in continuous coarse rhythmical tremors like those of paralysis agitans, which became exaggerated when he was spoken to. Every now and again he starts and looks upward and laterally, as if he feared a shell would drop on him." Fine tremors like those of exophthalmic goiter have been noted, and also tremors of the intention type; but most of them were coarse rhythmic tremors like those of advanced paralysis agitans. In one of Mott's cases, a former pugilist was terrified by the explosion of bombs dropped by a Zeppelin and "developed a curious tic, which took the form of jerky purposive movements of the shoulders and head, as if to avoid a blow, and facial grimaces such as a pugilist might assume in a fight."

4. *Dreams, Terror and Mental Changes.*—In shell-shock, the patients often suffer from terrifying dreams. These are associated with the manifestations of fear, such as terrified facial expressions, cold blue hands, feeble pulse and respiration, sweats and tremors. These dreams often take on the form of nightmares, during which a soldier will go through the pantomime of some terrible experience at the front. I have seen men stand up in bed, sweating and pale, continually shouting epithets at the invisible enemy, go through the pantomime of a charge "over the top," and a hand-to-hand or bayonet attack on the enemy. Mott[3] gives a case as follows:

> A captain, aged 20, was admitted under my care in a state of restless delirium; he moved continually in the bed, sat up, passing his hand across the forehead as if he were witnessing some horrifying sight, and muttering to himself; yet, when interrogated, he answered quite rationally. This motor delirium I associated with the continuous effects on the conscious and subconscious mind of the terrible experiences he had gone through.

Sometimes the terror leads to mania:

> A young man, aged 19, was admitted, suffering with shock due to emotional stress and shell-fire. He suffered with terrifying dreams, and after he had been in the hospital a short time, he developed sudden paroxysmal attacks of maniacal excitement. One afternoon he had been helping as usual in the kitchen, and then he went and lay down on his bed and apparently went to sleep; he suddenly awoke with a startled, terrified look, became flushed in the face, sweated profusely, and made for the door as if to get away from some terrifying conditions. He was restrained with difficulty. He remained in this excited state, glaring rapidly from side to side, giving one the impression that he was suffering from terrifying hallucinations of sight and hearing, although he would make no response to interrogation. He did not recognize his wife, the doctors, or the sisters. Once when I, accompanied by two medical officers in uniform (strangers), came up to speak to him, he became violently agitated, as if some terrifying conditions had been aroused by the sight of the uniforms; the face was flushed and he sweated so profusely that the perspiration dripped in a stream off his nose. The attacks would last from a few hours to a few days; they came on quite suddenly, like an epileptic fit, and often without any apparent cause. It may be mentioned that there was no obtainable history of epilepsy or insanity in the family. The case rather suggests the psychic equivalent of epilepsy in the attacks.

Mott noticed other points of interest in his patients. Many complained of a falling or sinking feeling; often in their dreams, patients were heard to cry out and would awake to find themselves in a cold sweat; some officers gave commands to their men and urged them on to battle; and some performed the pantomime of raising the gun to the shoulder and pulling the trigger.

The revival of old associations in shell-shock dreams is not uncommon. In one of Mott's cases, the patient would dream of meeting a leper in a mine passage. He had been alarmed previously by a leper in a South African campaign. A single predominating incident may be repeated again and again in these terrifying dreams. A soldier who had seen a legless body of a comrade at the front had many dreams in which a legless body was always the central figure.

5. *Special Sense Disturbances.*—(*a*) Vision: The usual disturbances are photophobia, with or without blepharospasm, "smoky vision," diminution in the visual fields, and amblyopia. The photophobia is not usually a serious or persisting symptom; "smoky vision" may last for months. Diminution of visual fields alone is common. Patients with amblyopia usually go to special hospitals. The first and best cases recorded are those by Parsons[15] early in 1915. Functional blindness is more common than deafness, loss of smell or taste. "On examination, it is found that there are intense blepharospasms and lacrimation. The lids are opened with great difficulty, and examination of the eyes is almost impossible in the early stages." The man is struck blind instantaneously. In two to three weeks blepharospasm diminishes. "The fundi appear to be absolutely normal. The pupils react to light, though in some cases the reactions are sluggish, and sometimes one pupil differs from the other, being larger or more sluggish in its reaction. By this time probably some restoration of sight has occurred, light is perceived and large objects may be distinguished. As improvement occurs, the patient manages to grope about, usually with his hands outstretched before him, but it is noteworthy that he does not usually stumble against objects in his path. As soon as it is possible to take the fields of vision, it

18. Myers: Lancet, London, 1916, **1**, 608.

is found that they are markedly contracted, and that indeed to a degree which seems scarcely consistent with the avoidance of obstacles in walking. The recovery of vision is slow, but eventually it always seems to be complete."

In Pemberton's[14] case which I mentioned before, of the sergeant who suddenly collapsed twelve hours after seeing the gun-crew next to his hit, the amblyopia and contraction of fields was marked when first seen. There were many sensory and motor disorders, also.

(*b*) Speech: The speech defects most commonly noted are mutism, aphonia, stammering, stuttering and verbal repetition. Mutism is most common—about one in twenty, according to Mott. The patients cannot produce any audible sound; there is no sound when they attempt to laugh, try to whistle or cough. Most of these patients can write. "Many who are unable to speak voluntarily call out in their dreams expressions they have used in trench warfare and battle. Sometimes this is followed by return of speech, but more often not." Mott[3] continues, "This mutism is due to emotional shock; it is a psychic rather than physical trauma, in my judgment, for it in no way differs from the description of hysterical mutism thus given by Bastian." Anesthesia of the pharynx has been noted. Some cases will be quoted later, in the consideration of treatment.

(*c*) Hearing: Deafness often accompanies mutism or aphonia, causing the condition of functional deaf-mutism. "It is not at all infrequent for a man to be deaf on one side and not the other, and the history often shows in these cases that a shell has burst on this side of the man. Auditory hallucinations are not uncommon, and the patients complain of hearing the bursting of shells, of the noise of shells coming, of bullets whizzing, and of whistles blowing. Hyperacusis, or extreme sensibility to sound, is a common and very troublesome symptom, making the patient miserable and apprehensive." Mott found that many relapses occurred during a Zeppelin raid (on London), and one man, "a sergeant who had been a professional pugilist of great renown, suffered extremely, so that the noise of the click of billiard balls irritated him to such a degree that he would protest forcibly against the game continuing. His fellow patients found that they could easily cause him to flee by taking their slippers off and banging them on the ground sufficient to produce a sharp loud noise."

(*d*) Taste and Smell: Both are often affected, but owing to the difficulty of an examination which is so largely subjective, they are often omitted from the case reports. No very definite data could be obtained about them.

6. *Cardiovascular.*—"Patients often complain of palpitation, breathlessness on exertion, and precordial pain. There may be physical signs of dilatation and tachycardia. The pulse is often small and increased in frequency; the blood pressure is never high. It was often below 110, and never above 135. The hands are frequently blue or mottled and cold; and often there is cold, clammy sweating of the palms. The surface temperature may be very low; in one case it was only 16 C." (Mott[3]). Most of the patients with marked cardiac symptoms go to special hospitals. The complaints of these patients are: breathlessness, pain, giddiness, palpitation, and exhaustion on exertion. There are no physical signs of structural change in the heart. These are the cases of "irritable heart" that have received so much attention by Dr. Thomas Lewis and his colleagues at the Military Hospital, Hampstead, England.[19] In the broad sense these cases come under "shell-shock," as they are certainly functional disorders of the nervous system that are peculiar to modern warfare.

The vasomotor conditions are quite noticeable. Osler mentions the "men with unstable vasomotors" as unfit for the trenches. Excessive flushing and dermographia are quite commonly seen.

Headache is often a prominent symptom. Mott[3] says:

> The commonest situation for the maximum pain is the occipital region and the back of the neck; it is often described as a tight compression, like a helmet—the helmet of Minerva. The pain may be in the frontal region over one or both eyes, over the vertex, in one or both temples, or at the back of the eyes. The pain is variously described as burning, stabbing, or a heavy, dull, dizzy feeling, a feeling like a tight hat, or a red-hot wire being run through the temples. It is worse at night, especially upon lying down and trying to sleep.

NEUROPATHOLOGY

The neuropathology of shell-shock has received scant attention in the literature except for the work at Dr. Mott's laboratory. The reasons are quite obvious, as very few patients died at the hospitals except by chance of intercurrent disease, and those that die on the field are seldom examined postmortem. In the last year, however, more provision has been made for necropsies at or near the front, and by arrangement with the Royal College of Surgeons, London, certain brains are being sent back, properly preserved for future study. Dr. Mott[20] has been fortunate enough to secure a few of these, and his findings are of great interest. He first noticed the marked similarity between the brain of a soldier dead from shell-shock and the brain of a man dead from carbon monoxid poisoning. His study of carbon monoxid poisoning before the war led him to think that the main postmortem findings were extensive capillary hemorrhage in the brain, especially in the corpus callosum, the internal capsule, cerebral peduncles and centrum ovale.[21] Two cases were from carbonyl of nickel works. There was a case of suicide by illuminating gas. In the first case of shell-shock, a man had been buried by a shell blowing in a parapet, and had died two days later. No visible wounds were found on the body. Throughout the white matter of the centrum ovale, and especially in the corpus callosum, were multiple punctate hemorrhages. Mott[3] says: "This appearance to the naked eye corresponds to that which I have described in carbon monoxid poisoning. The same microscopic appearances were observed as those seen in coal gas (CO) poisoning, only the hemorrhages were more extensive." Apparently the fatal cases are the gas cases, as Mott has found the same appearance in later brains. These are the true cases of shell-shock with burial that form a very small part of the vast number of cases in men who return from the front with symptoms of a neurosis. Whether these also may have minor brain hemorrhages is problematical, but we may feel certain that many men who never got within the range of shells and yet develop brain symptoms probably have no such gross pathologic lesions. Most neurologists believe with Wilt-

19. Heart, 1917, **6**, No. 4.
20. Mott, F. W.: Lancet, London, 1916, **1**, 331, 441, 545; Brit. Med. Jour., 1917, **1**, 637.
21. Mott, F. W.: Arch. Neurol., 1907, **3**, 246.

shire[22] that "chemical poisoning by shell gas cannot be more than an exceptional cause of shell-shock."

TREATMENT

The treatment of the war neuroses naturally divides itself into a number of separate fields. One may treat the symptoms, at the same time paying attention to the general health of the patient. This method is the one generally used in the British hospitals. But some authors believe that we must go deeper than the treatment of symptoms and make a study of the underlying mental condition that enables a "fixed idea" to develop. The latter form of therapy leads us to the large question of psychanalysis and its place in the treatment of shell-shock. Laying this aside for a moment, I shall take up the treatment of the symptoms.

Adrian and Yealland[12] say that the three principles involved in those methods of treatment that aim only at relieving the functional symptoms are: (1) suggestion, (2) reeducation, and (3) discipline. "The aim of suggestion is to make the patient believe he will be cured, and to lead him on from this to the belief that he is cured." These authors have obtained the best results by:

> A very brief suggestive treatment followed by rapid reeducation, which is continued, if possible, without a pause until the normal function is entirely regained. The suggestive treatment may take any form, but it is essential that the patient should be convinced that it will produce an immediate recovery. In untreated cases there is rarely any difficulty in this, and the conviction can be strengthened by using a form of treatment which will be capable by itself of evoking some part of the function which is temporarily in abeyance. For instance, a case of mutism may be cured by tickling the back of the mouth so as to induce reflex phonation. The patient is compelled to make a noise, and the fact that he has done so will convince him that the treatment will be effective. In the same way, a strong electric stimulus will produce a sensation and motion in a limb which is supposed to be anesthetic and paralyzed, and this in itself will be enough to convince the patient that he is on the road to recovery.

The application of strong electricity by the faradic current is a very successful method of augmenting suggestion. Of course, the secret of success lies in the fact, as these authors point out, that "the patient must be convinced that the physician understands his case and is able to cure him. This idea should be fostered from the moment the patient enters the ward." Many treatments have failed because of a lack of confidence of the operator in himself. The physician's authority must be absolutely unquestioned, and "an air of complete assurance is far more convincing than the most elaborate reasoning."

Hypnotism is a form of treatment under the head of suggestion. It is very easy to hypnotize most patients lightly, according to Adrian and Yealland:

> They will readily accept the idea that they cannot open their eyes or move their limbs, and they will comply with any suggestion which does not relate to their disability. Unfortunately they are not nearly so tolerant when the suggestion touches their fixed belief that they cannot speak or that their legs are paralyzed. With a patient who is intelligent and anxious to get well, hypnotism may be extremely successful, and it is certainly of great value in the treatment of subjective troubles such as insomnia, fighting dreams, etc."

Myers[16] reports that in twenty-three cases he had apparently complete cures in 26 per cent., and distinct improvement in 26 per cent. He failed to hypnotize 35 per cent., and found no improvement after hypnosis in 13 per cent. He says that it "invariably proved of great assistance toward recovery." Eder[23] found that out of seventy-eight patients only three could not be hypnotized at the first attempt, and says that "hypnotism has been most successfully applied in the treatment of our soldiers." Buzzard[5] sums up the subject by saying:

> My experience leads me to believe that any form of suggestion, whether applied under normal conditions or under the influence of anesthetics or hypnosis, may be successful; but the success depends first of all on the willingness of the patient to recover, and secondly on the adequacy of the suggestive stimulation.

Strong suggestion in the excitement stage of ether anesthesia has been tried, and has been successful in certain cases of mutism and loss of hearing.[24] O'Malley[25] has been very successful in his cases of aphonia and deafness by treatment with suggestion and reflex excitation.

The second principle of treatment outlined by Adrian and Yealland is reeducation. Under the heading of reeducation they include the method of simple persuasion, in which the patient is convinced by logical argument that his condition is not so serious as he supposes. However, it is not easy to convince a patient that his trouble is purely mental when he has physical symptoms and he naturally looks for a cure by physical means. Electricity is the best and the most mysterious to the layman of the physical means which we have at our command.

While reeducation by physical means is a valuable adjunct to treatment, occupation plays a very important part. Drills and physical exercises should be replaced by productive occupations as soon as possible. Those which are nonproductive should be avoided. All occupations, and especially those carried on by patients seriously incapacitated, should be regarded merely as steps in the process of their education. Constantly more difficult tasks should be assigned as a means toward the restoration of the lost or impaired function.

The third form of treatment is by discipline. Isolation is often used. It may supply "the needful stimulus to recovery by making the patient's illness a dreary and unprofitable business, instead of a source of pride and satisfaction. For this reason it is extremely useful in cases of functional tremors and pseudochorea, where the patient becomes quiet as soon as he is deprived of his audience."[12]

The details of the treatment of various symptoms as carried out by Adrian and Yealland cannot be gone into. The essential elements consist in a very brief suggestive period followed by rapid reeducation. The self-confidence of the physician, the faith of the patient, and the rapidity of operation are all important factors in the method of treatment.

Other methods of treatment consist in the emphasis being placed on the general condition of the patient. This is Mott's method of procedure, and it certainly has been very successful in his hands. He[3] says, "Only common sense and interest in the comfort, welfare, and amusement of these neurotic patients are necessary for their recovery." He lays special emphasis

22. Wiltshire: Lancet, London, 1916, **1**, 1207.

23. Eder: Lancet, London, 1916, **2**, 264.
24. Dawson: Lancet, London, 1916, **1**, 463. Proctor: Ibid., 1915, **2**, 977.
25. O'Malley: Lancet, London, 1916, **1**, 1080.

on the hospital and its environment. At his beautiful institution outside of London, he has:

Light airy wards, and day rooms for meals and recreation, plenty of single rooms for the isolation of cases that are troubled with noises or require special attention; and especially valuable are the baths, so that every soldier can get a warm or cold spray bath every day. The warm baths, and especially the continuous warm baths, are especially valuable for promoting the action of the skin, of relaxing the tired muscles, and by the soothing influences helping to induce sleep, so that less hypnotics are required to be employed.

In these ideal surroundings the patients are usually left to adjust themselves.

When indicated, mild suggestive and persuasive measures are used, as in the case of amnesia partly quoted. The story continues as follows:

We heard from his father that he was a good musician, and I said to him, "G——, I hear you are a good musician," and I asked him if he could play the piano or sing; there was the same wondering, bewildered look, and he muttered something which was to the effect that he could not sing or play. Three days later I said, "Come, you can whistle 'God Save the King.'" He took no notice, but upon pressing him, he looked up and a glint appeared in his eyes, and he said "You start me." I whistled the first bar; he took it up and whistled it admirably. I then asked him to whistle "Tipperary," but he could not do it till I started him, and the same with several other tunes, but once started, he had no difficulty, and I recognized from the admirable intonation that he was, as his father described him, an excellent musician. I could not, however, that day get him to start upon his own initiative any one of the tunes he had whistled. The next visit, three days later, I observed that his expression had changed. He smiled when I spoke to him, and I recognized clear evidence of a mind that had partly found itself. He could not whistle by himself any of the tunes I had previously started him on when I called for them. [He relearned to play the piano by first having his finger held on the keys and a melody played.] The next time I came, he was able to play any music set before him. His associative memory and recollection of music were in advance of other associative memories. Thus, eight months after he had recovered his musical memory, he had very imperfectly recovered his memory of elementary facts regarding his profession as a land surveyor, and there was still a tendency to a vacant, mindless expression and prolonged reaction time as shown by delay and slowness in responding to questions, as if there were a difficulty in linking up the necessary associations.

Mott reports that about thirty-five cases of mutism have come under his observation, with recovery in all. Some of the recoveries take place under most amusing circumstances:

In one case the patient "was sitting in his wheeled-chair playing baseball, at which he was quite good, when a runner overturned him; the sudden emotional shock and surprise made him exclaim aloud, and since then he has quite recovered speech." Strong faradic stimulation to the larynx in this patient had not resulted in phonation. Another patient "was in a punt and it was turned over, and he was capsized into the water, which made him shout out. Practically, he had been mute for more than eight months. He often shouted words in his sleep about trench warfare, so he must have had dreams but forgot them." This patient under the strong suggestion of removal of adenoids did not speak. In regard to a third patient, the following is told: "His fellow soldiers thought he ought to hear and speak, and they adopted energetic measures to make him shout out for help. Two of them feathered him with a slipper and then nearly throttled him. He struggled and shouted 'Stop it.'"

One dreamed he was falling over a cliff, shouted out, and recovered his speech. A deaf-mute was heard to speak in his sleep. He was told of it by a comrade. He said, "I don't believe it."

Mott's summary of treatment is as follows:

Be cheerful and look cheerful is the note that should ever be sounded to these functional cases. Sympathy should not be misplaced, although it should be shown to all these poor fellows who have a fixed idea of never recovering; it is not their fault, it is a real thing to them, and no one could be more grateful than these cases of functional nervous disability for cheery words. I use many of these cases that have recovered as object-lessons. I do not find hypnosis or psychoanalysis necessary or even desirable."

Forsyth[11] thus outlines his treatment:

The only treatment during the acute stage comprises three items—physical rest in bed, mental quiet, and good food. A private room is best. "Noises of all kinds, indoor and out, are borne with intolerance and are harmful, especially if they are unexpected and even remotely recall the dreaded shell explosions." At first the patients should be left to themselves, without being disturbed by the taking of medical histories or conversation. "They must expect to pass restless nights with piercingly vivid dreams, for which even hypnotics are only palliative. Those with the mildest symptoms can safely be allowed to get up within a few days, gradually increasing this exertion, until perhaps in a week or a fortnight they can get away to the quiet of the country or the seaside; and in another six weeks they will probably be able, not indeed to return to the front, but to take up light duties at home."

Most patients need bed for three to four weeks or longer, followed by two or three months of quiet living. "Throughout the greater part of convalescence any indiscretion in the way of mental or physical exertion beyond the narrow margin of the patient's endurance at the time seems regularly to entail a setback out of all proportion to the extra effort."

The symptoms of depression of spirits, listlessness, taciturnity, desire for solitude, lack of confidence, poor appetite and sleeplessness are "best and most quickly relieved when the patient has been induced to talk freely of what is on his mind, the opportunity at the same time being taken to present his facts to him in their true light, together with the additional information he needs to form a just opinion of his conduct and to rehabilitate himself in his own esteem." Forsyth looks at the neurotic symptoms as in a case of everyday neurosis, a problem dealing with "the psychical development of the patient since childhood; and the further treatment must follow psychanalytical lines." A patient who has not been able to regain his self-control after three or four months is in need of extraneous help, that is, psychotherapy.

Rows'[26] treatment is along nonradical lines. He says that the patient's difficulty lies chiefly in the fact that:

He has little or no insight into the nature and mode of origin of his mental illness. This insight can be provided by explaining to him in plain language the mechanism of simple mental processes, by enabling him to understand that every incident is accompanied by its own special emotional state and that this emotional state can be reawakened by the revival of the incident in memory. The patient will thus be led to see that it has been no gross disease and no supernatural agency which has disturbed him; he will be able to recognize the relation of cause and effect in the origin and development of his illness. When this relation is appreciated, both the patient and the physician will begin to realize that they have some ground in common. The physician should

26. Rows: Brit. Med. Jour., 1916, **1**, 441.

be prepared to give at least an hour for an interview, and in most instances several interviews will be necessary.

The value of psychanalysis as a form of treatment has caused much controversy in England. Adrian and Yealland[12] believe it to be very valuable as a form of treatment for the state of mind of the patient which has allowed a fixed idea to develop. The fixed idea itself that gives rise to the functional symptom or paralysis, loss of speech, etc., is best treated by suggestion, but at the basis of this is a state of mind that will not vanish by these methods. They say that the patient minus his symptoms "will always be liable to develop hysterical troubles in moments of emotional stress and exhaustion, just as a man with a malformed chest will be liable to attacks of bronchitis." This is borne out by the number of patients returned from the front with a remission of symptoms after apparent recovery. Psychanalysis, in their opinion, will "cure not only the hysterical symptoms but also the hysterical mentality." If the repressed desire is "unearthed and explained to the patient, the repressed conflict will vanish, and with it not only the hysterical symptom but also the state of mind which made this symptom possible." Practically it takes too long a period to use psychanalysis on the average shell-shock patient, and it can be used only in special hospitals. One must therefore treat symptoms during the war and leave this longer method for more leisure moments.

Eder[23] also thinks psychanalysis valuable but not usually expedient in war time. He, however, uses it "for purposes of diagnosis or with a view to helpful suggestion in most cases."

One of the most important problems in the early part of 1915 was the question of sending the apparently cured patients back to the front. Those that went back proved useless as soldiers in front-line trench duty, for they broke down again either on the way to France or soon after reaching the trenches. Forsyth's views are that "with an increasing experience of these cases a very strong doubt rises as to the judiciousness of sending any cases of nerve-shock, with few exceptions, back to the firing line." If the patient knows he will not return to trench warfare, he makes a more rapid recovery. Forsyth thinks that these patients should be kept in England on light duty because of the following points:

1. Their untrustworthy memory (one of the last symptoms to disappear), by leading them to forget to carry out orders or to forget when they have carried them out, may entail the miscarriage of plans.

2. Their example may infect those around them with irresolution or even worse.

3. When the strain becomes severe, they will almost certainly break down a second time.

The hospital building and its surroundings are important in the treatment of war neurosis. The English War Office has arranged two exceptionally fine hospitals for officers,[27] one on a quiet street in London, of thirty-three plain bedrooms with gray walls, without pictures or ornaments. Here the patients are received from France and given from three to four weeks of a modified Weir-Mitchell treatment of absolute rest in bed in quiet surroundings. When somewhat recovered, they are removed to a large country house, where they remain for six weeks or longer and receive the treatment that has been outlined above.

For the soldiers a complete series of hospitals has been inaugurated.[28] There are two "clearing hospitals" of 500 beds for all neurologic patients, including those with functional paralysis, disturbances of speech, amnesia, mutism, deafness, amblyopia, motor agitations, nervous debility, mild neurasthenia, simple mental confusion, anxiety psychoneurosis, simple mental depression, etc. The treatment here consists of rest, proper feeding, massage, electricity, baths, psychotherapy, simple suggestion and occasional hypnosis. From these two hospitals about 40 per cent. return to light duty, 20 per cent. are invalided, and 20 per cent. are transferred to special institutions.

Of these special institutions there are two of about 550 beds, mostly with single isolated rooms. No new patients are sent here, but only those transferred from the neurologic hospitals. Here are treated severe neurasthenia, mild psychoses, profound amnesia, epilepsy and mild primary dementia. The treatment consists of rest, proper feeding, recreation and massage. Psychanalysis is used in selected cases. About 40 per cent. of these patients return to light duty.

There are also two hospitals of 700 beds for certificable mental patients. From 10 to 15 per cent. of these return to light duty.

PROPHYLAXIS

What can the Medical Corps of the United States Army do toward the prevention of shell-shock? Obviously it must be checked at the recruiting station or in the cantonment camps before the men leave for France. There ought to be no question in the minds of the medical officers as to the advisability of checking this condition at the source, for no one who has seen the results of modern warfare on the unstable mind can do otherwise than urge such measures with his utmost vigor. It becomes the duty of each medical examiner to weed out from the recruits such men as are liable to shell-shock. By so doing, an enormously important advance will be made in our army, as judged by the experiences of the other armies of the Allies.

We have been strongly advised by Osler to check the enlistment of the neurasthenic. It is obviously difficult to pick him from the crowd, "as he may come up in good form" and be eager to go overseas. But it is not so difficult with the mentally deficient, the "queer stick," the "boob," and the butt of the practical jokers. He is soon observed and noted by both officers and men, and if he is singled out and talked with for five or ten minutes one ought to have no difficulty in deciding his fitness for active trench warfare. One ought also to look especially carefully into the past history of the depressed, the man who worries unnecessarily, the self-conscious, the shy, the high-strung, excitable man, the violent-tempered, the nervous, the timorous, the easily frightened, or the neurotic individual. Any or all of them may make poor first-line-trench soldiers. The task is a difficult one, but that in itself should not prevent our trying. What an advantage it would be to our army officers, and what a saving of life it would mean to our men, if the shell-shock patients could be eliminated from our forces that will fight overseas! Such utopia is probably impossible, but I feel confident that careful weeding out of the mentally unstable will certainly greatly reduce the numbers of shell-shock cases that are bound to appear in our casualty lists.

27. Lancet, London, 1915, **2**, 1155.

28. Turner: Lancet, London, 1916, **1**, 1073.

THE WILD RATS OF THE SOUTHERN STATES AS CARRIERS OF SPIROCHAETA ICTEROHEMORRHAGIAE *

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In order to preserve the health of the large number of men now being trained in the various cantonments, it is essential that we recognize the sources of infections to which they may be subjected. This applies particularly to infectious jaundice, a disease with which many of the medical officers and civilian physicians are not familiar.

Infectious jaundice is not a new disease, as Cleghorn reported an epidemic in Minorca in 1745, and Larry, while he was with Napoleon in Egypt, in 1800, observed an epidemic near Cairo. In the Civil War, 22,509 cases were reported among the Northern troops, with 161 deaths. Epidemics were also observed among the Bavarian troops in the France-German War in 1870, and the disease has been epidemic for many years in Japan. A small epidemic was reported in North Carolina in 1900, and Barker described a series of cases which he observed in the city jail in Baltimore, in 1909. The case which we observed here in Nashville was in the service of Dr. O. N. Bryan, in the Vanderbilt University Hospital, and is the first so far as we can discover that has been reported from this section of the United States.

In view of the trench training that is now being given to the soldiers at the various Southern camps and the possibility of their being subjected to infection from the rats that frequently infest these places, we thought it important to determine whether or not the wild rats of the South harbor the *Spirochaeta icterohemorrhagiae*. The present report deals with the results of this investigation.

The etiology of infectious jaundice has been attributed to many bacteria, but none of these has been shown to bear à definite relation to the disease. In 1914, Inada, Ido and their associates[1] succeeded in transmitting the infection to guinea-pigs by intraperitoneal injections of blood taken from patients suffering from the disease, and noted the presence of large numbers of spirochetes in the blood and in the organs of these animals. Later, the same observers found a similar spirochete, which they termed *Spirochaeta icterohemorrhagiae*, in the blood and organs of human patients dying from the disease. During their investigations, made to determine the source of the infection, they found that wild rats harbor the *Spirochaeta icterohemorrhagiae*, and that the majority of persons affected were those whose occupation brought them into more or less intimate contact with places infested with these animals. The work of the Japanese observers has been confirmed in various parts of Europe, particularly in the war zone, and Noguchi,[2] in this country, found that the spirochetes were present in the wild rats in New York City.

With the object of determining whether or not the wild rats of this locality harbor the *Spirochaeta icterohemorrhagiae*, we examined a large number caught in different places in Nashville.

The rats were alive when brought to the laboratory. They were killed with chloroform, the hair was moistened with alcohol, and the kidneys were removed with precautions to insure asepsis. One kidney from each animal was made into an emulsion in saline solution and injected into the peritoneal cavity of a guinea-pig. The remaining kidney was prepared for microscopic examination. Levaditi's method was used to demonstrate the spirochetes in the organs.

More than a hundred rats were examined, and of these at least 10 per cent. harbored the *Spirochaeta icterohemorrhagiae*. These rats were obtained from different parts of the city, and so far as can be determined the various localities have given about the same proportion of infected animals.

The guinea-pigs that developed the disease usually died from the twelfth to the fourteenth day following inoculation. Jaundice of the sclera and of the mucous membranes became very marked before death, and postmortem examination revealed a yellowish discoloration of the subcutaneous tissues and of nearly all the internal organs. In addition, there were many small hemorrhages scattered through the subcutaneous tissues, and particularly in the inguinal and axillary regions. The spirochetes were demonstrated in the urine with the India ink method, and were readily found in the kidneys from the infected rats and in those from the inoculated guinea-pigs that developed the disease. These sections were stained by Levaditi's method. The virulence of the organism increases rather rapidly, as shown by the short duration of the disease when material from infected guinea-pigs is injected into others. These animals die in about half the time required for those inoculated direct from the rats.

From the foregoing it will be seen that about 10 per cent. of the wild rats of this community harbor the parasite causing hemorrhagic icterus, and as Noguchi has shown that the rats about New York City are also infected, it is probable that similar conditions apply in many sections of this country. The importance of these observations becomes more evident when we consider the trench training that is now being given to American soldiers in the various camps. Here we have duplicated in many ways the conditions that make possible the large number of cases now being reported in France and Italy, and our demonstration that the rats of the South harbor the parasites of this disease makes it obvious that all possible means should be used in the camps to eradicate these pests. It has been shown that the virulence of this organism for guinea-pigs increases rapidly when transmitted through several series of these animals, and we must not forget that the same thing may occur when the organism becomes acclimated to human beings. This would seem to explain the high mortality of 38 per cent. noted in Japan, where the disease is more prevalent; while in Europe, where fewer cases have been observed, the mortality is much less.

* From the Departments of Experimental Medicine and Pathology, Vanderbilt University, Medical Department.

1. Inada, Ido, et al.: The Etiology, Mode of Infection and Specific Therapy of Weil's Disease (Spirochetosis Icterohemorrhagica), Jour. Exper. Med., 1916, **23**, 377.
2. Noguchi: Hideyo: Jour. Exper. Med., 1917, **25**, 755.

Insurance for Parturients.—The Italian government, it is announced, has arranged a system of insurance for parturients in wage-earning families. At childbirth each mother receives 40 lire ($8) from a fund to which for each person insured the state gives 12 lire annually, the employer 1.25 lire and the insured 1 lire.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, NOVEMBER 24, 1917

THE HEART'S ACTIVITIES

The movements of the mammalian heart are so rapid and the performances of its various parts follow each other in such rapid succession that they call for delicate methods of registration and study. Many of our readers can easily recall the variety of recording apparatus that furnished the data in the early work of Chauveau and Marey, and in the investigations of many of their successors. Recording levers and tambours played a conspicuous part. Gradually they were made lighter and more delicate; yet such mechanical devices left much to be desired.

The introduction of electrocardiography has marked a decided step in advance. The real starting point was perhaps represented by the investigations of Burdon-Sanderson and Page in 1878 with the capillary electrometer on the tortoise heart. Waller in London initiated this mode of investigation on man a few years later; but, as Lewis[1] remarks, it was in the present century that Einthoven, in Holland, perfected an instrument which, on account of the facility of its working and the precision of its movements, has enabled us to unveil much that was formerly mysterious. This instrument is the string galvanometer, and its construction must rank as an outstanding milestone in the study of the questions that we are considering. The electric current and the sensitive photographic plate have contributed in an unanticipated way to the solution of many difficult problems in the physiology and pathology of the heart.

What are some of the acquisitions to science derived through these studies, particularly as they have been combined with elaborate investigations of the minute morphology of the heart? Lewis, himself a skilled experimenter in this field, offers this explanation for the development of two sets of chambers in the heart: an upper one "frail and thin-walled"; the lower "sturdy and massive." The function of the auricle, he concludes, is not to fill the ventricle, as is so commonly taught in elementary classes. The blood pumped from auricle to ventricle at the end of the heart's diastole is only a fraction of its full content. The function of the auricle is to save the veins from overdistention. During a third of the ventricular cycle, during the period when the ventricle is pouring blood into the body, the circulation is completely obstructed at the auriculoventricular orifices. Yet the blood flow in the veins continues; the flow goes on into the expanding auricles. The mechanical function of the auricle is that of a reservoir, to catch and hold the content of the stream when a dam is thrown across it. It wants little strength for this task; its walls must stretch easily; they have to pump against a low resistance; the muscle layer is therefore thin.

The spread of the contraction wave from the mouth of the great veins to the auricular mass as a whole, Lewis continues, is expedited by the central position of the node from which the wave starts, by the architecture of the muscle bands that radiate from it in all directions, and, lastly, by the relatively high rate of conduction that auricular muscle possesses.

In traveling through the auriculoventricular node, the contraction wave meets a long delay in its progress while the auricle is emptying itself. Thereupon it spreads to the bundle, a structure of fibers endowed with conducting fibers of the highest order, with the result that all parts of both ventricles are thrown into contraction with the closest approach to simultaneity. Hence, too, the mechanical advantage of the ventricle as a driving power.

1. Lewis, Thomas: Upon the Motion of the Mammalian Heart, Croonian Lecture, Proc. Roy. Soc., B, 1917, **89**, 560.

THE EFFECT OF RANK ON THE DUTIES AND RESPONSIBILITIES OF THE MEDICAL OFFICER

The importance of the medical officer in the armies engaged in war, as indicated by the rank and authority given him, is less highly esteemed in this country than in any other, including both our allies and our enemies. Medicine has accomplished great triumphs in the armies of Europe. Under unprecedentedly difficult conditions, sanitation has been so ably maintained that both morbidity and mortality from the infectious diseases are less today in the military than in the civilian population of the warring nations. In the British Army, 80 per cent. of the wounded have been returned to duty. The number of hospitals in France reaches into the hundreds, and for the most part their equipment is excellent. Scientific laboratories are carrying on practical research investigations. Chemists are finding antidotes for the multitudinous poisonous gases turned on by the Germans, and are discovering new compounds to be used offensively. Within twenty-four hours after the first discharge of chlorin by the Germans, not only had the nature of the gas been determined and an antidote found, but protective masks were being made; and within ten days the Germans were being treated with the more deadly phosgen. Indeed, scientific studies made at the front saved the armies of Great Britain and France from complete

annihilation. Rehabilitation hospitals in which the badly injured are supplied with artificial limbs and other devices are working successfully and converting the apparently hopelessly maimed into productive, self-supporting citizens. In fact, these institutions constitute one of the great triumphs of military and conservative medicine. Every wounded and sick soldier can be instantly located and his condition reported to his friends. In this way the discontent arising from anxious waiting for news is avoided. There has been no breakdown in the medical service in the great armies of Europe, as has been the case so often in the past and with us in 1898. When a son is killed in battle, parents seek and find consolation in the proud knowledge that he has died fighting for his home and his country; but when he is wounded or sick and dies from neglect, there is no consolation, and in the most patriotic soul a bitterness against those in authority develops.

All this and much more might be said concerning the efficiency of the medical service of our chief allies. What is the explanation of its efficiency? The answer is that the medical officer is given support backed by rank and authority. A line officer in the British Army hesitates a long while before he rejects the advice of his medical colleague, because that colleague has rank and authority commensurate in some degree at least with his own, and is recognized as his superior in the special line of work. Compare this with the record of the congressional inquiry into the conduct of the War Department in the war with Spain, when, according to his own testimony, the commanding officer at Chickamauga in 1898 ostentatiously drank from a well condemned by his medical officer, while his hospitals were filled with typhoid fever patients. We have gone into this war with the medical officer invested with no more authority than he had in 1898. Is it unreasonable to ask if we are to repeat the experiences of that time? However, we are told that the line officer of today is much wiser than his predecessor of twenty years ago, and since he makes this statement himself, we must give it credence. We certainly hope that it is true. It is the duty of the medical profession to protest against this condition. The medical men of this country are not slackers, as is shown by the fact that more than one seventh of their total number have voluntarily offered their services to their country, notwithstanding the failure of those in authority to give the reasonable recognition asked. We have asked for increased authority, and in the Army this can be secured only by high rank, because when a medical man goes into the service the government puts its stamp on him just as it does on the coin of the realm; and 30 cents will not buy a dollar's worth of anything. So far the protest has fallen on deaf ears.

Medical men will play the game and do their duty, whatever may be the verdict in this matter; but it should be clearly understood that they are going into the game under a heavy handicap. They will do the best they can; but if discontent should arise from poor or poorly prepared rations, if respiratory diseases prevail as the result of overcrowding, if pneumonia becomes widespread because barracks are not heated and soldiers are not warmly clothed and amply provided with blankets — if all these things happen, the medical officer will continue to do the best he can under the conditions, but he will not be responsible for the conditions.

PULMONARY VENTILATION AND THE CARBON DIOXID OF THE BLOOD

The renewal of the air in the lungs, with which the blood exchanges its gaseous constituents, is brought about by muscular movements, which are under the control of the nervous system. When it was discovered that the functioning of this regulatory mechanism was in large part dependent on the chemical composition of the blood reaching the respiratory center, the natural tendency was to ascribe the stimulation of the latter to a fall in the oxygen tension in the circulatory system. It is now understood, however, that until the oxygen tension falls very decidedly, no noteworthy change in the ventilation of the lungs takes place so long as an increase of carbon dioxid tension is prevented. The classic investigation of Haldane and Priestley, reported in 1905, has demonstrated in a convincing way that the total volume of air sent in and out of the lungs in a unit of time by the respiratory movements is regulated by the carbon dioxid tension of arterial blood, which is the same as that of the alveolar air of the lungs. Subsequently, Haldane and his co-workers showed, in 1913, that the alveolar oxygen pressure can be varied within wide limits without sensibly affecting the excitability of the respiratory center to carbon dioxid.[1]

Whether certain types of clinical dyspnea are due, primarily, to retained carbonic acid, rather than to other acids formed in metabolism, has frequently been asked by those engaged in the study of acidosis in its relation to pathologic symptoms. The difficulties in answering this question have been due in part to the lack of suitable methods for the detection of very small deviations from the normal in the composition of the blood. Indirect methods, such as the determination of the alveolar carbon dioxid and the total carbonate concentration of the blood, have become popular in the study of the interrelations between the composition of the blood and the respiratory exchange. In the physiologic laboratory of the Western Reserve University School of Medicine, Cleveland, Scott[2] has noted in

1. Campbell, J. M. H.; Douglas, C. G.; Haldane, J. S., and Hobson, F. G.: The Response of the Respiratory Center to Carbon Dioxid, Oxygen and Hydrogen Ion Concentration, Jour. Physiol., 1913, **46**, 301.
2. Scott, R. W.: The Effect of the Accumulation of Carbon Dioxid on the Tidal Air and on the H-Ion Concentration of the Arterial Blood in the Decerebrate Cat, Am. Jour. Physiol., 1917, **44**, 196.

animals that, when an actual increase in the hydrogen ion concentration of the blood is due to acids other than carbon dioxid, the bicarbonate content of the blood is reduced below normal. Evidence is presented to indicate that when the blood bicarbonate is diminished, there is an actual increase in the hydrogen ion concentration of the blood. When the increase in hydrogen ion concentration is due, on the other hand, to a retention of carbon dioxid, an elevation in the bicarbonate of the arterial blood may result.

Scott finds that when the inspired carbon dioxid has reached about 4 per cent., an increase in the hydrogen ion concentration of the arterial blood becomes detectable by colorimetric methods. With the oxygen in the inspired air varying between 13.15 and 30 per cent., like percentages of carbon dioxid produce the same elevation in the hydrogen ion concentration of the blood. It is interesting to learn that the respiratory center is stimulated to increased pulmonary ventilation by an acid increment in the blood far too small to be demonstrable by the most refined methods of analysis at present available. For example, an increase of less than 2 per cent. of carbon dioxid in the inspired air causes a conspicuous acceleration of pulmonary ventilation at a time when no change in hydrogen ion concentration can actually be detected in the arterial blood by the conventional methods. These facts furnish an interesting illustration of the remarkable facility with which the chemical regulations in the body are brought about; and they indicate how delicately the acid-base equilibrium of the body is balanced.

THE MEDICAL PROFESSION AND THE SELECTIVE SERVICE

The newspapers have acquainted our readers with the important facts concerning the next call under the selective service law. There is one factor of the new regulations in which the medical profession is especially interested — the medical advisory boards. The methods of determining the physical fitness under the old regulations were not altogether satisfactory; the new regulations are intended to correct them. Under the new regulations the preliminary examination is still to be made by the examining physician; but

> "if the examining physician is in doubt as to whether the registrant is to be held for military service, or if the examining physician finds the registrant to be qualified for military service and either the Government Appeal Agent, the registrant, or two members of the Local Board, are dissatisfied with such finding, such examining physician, Government Appeal Agent, members of the Local Board, or registrant may apply to the Local Board to have the registrant sent before the nearest Medical Advisory Board (provided in Sections 29 and 44 hereof) for an exhaustive reexamination."

Under the old regulations, such appeal would go direct to the district appeal board, and the physician of the district board would make the second examination. In many instances this physician associated with himself experts to assist him in making these examinations. To all intents and purposes the new regulations provide just such a group of men as this, but not connected with the appeal board. The doubtful cases, instead of being referred directly to the appeal board, as heretofore, will be referred to this medical advisory board. A reference to the report of the committee appointed by the American Medical Association, which appears elsewhere in this issue,[1] gives the principal points in connection with the establishment of these boards.

In the foreword to the publication of the new regulations President Wilson says: "I ask the doctors of the country to identify themselves with the medical advisory boards which are to be constituted in the various districts throughout the United States for the purpose of making a systematic physical examination of the registrants." As will be noted in the report above referred to, a physician has been appointed in each state on whom will rest the main responsibility for the selection of the personnel that shall constitute these boards. The responsibility that rests on these men is very great. But it does not rest on these men alone; it rests on the entire medical profession. The President has called on the members of the medical profession to assist in this work. The Provost Marshal General has accepted the advice and assistance of those representing the medical profession. Those physicians called on by the state adviser to assist him in making the selection of those who shall compose the medical advisory boards should feel it a duty to respond by giving their best advice as to the men who are qualified for this work. Let us not forget that while the governors will make the nominations, these medical advisers and those who cooperate with them will be responsible for the success or failure of this plan of passing on the physical fitness of the young men of the country for military service.

A SURGICAL DRESSING—SPHAGNUM MOSS

Sphagnum moss, from the Greek σφάγνος, moss, is a term now used to designate a single genus of about forty species of moss. This particular genus has also been known as muskeg moss or peat moss, the latter being the same substance in a semidecayed condition. It grows abundantly in England, in parts of Canada, in the United States and in Germany. At one time it was used internally with a reputed effect in menstrual disorders. Cathcart[2] quotes I. B. Balfour's description of the plant as follows:

> Its smooth stem is densely beset with leaves, and emits a branch at every fourth leaf; often these branches are turned downward, and apply themselves more or less closely to the stem. At the periphery of the stem are one or more layers of fine colorless chambers, known as capillary cells, whose

1. Association News, this issue, p. 1807.
2. Cathcart, C. W.: Cheap Absorbent Dressing for the Wounded, Brit. Med. Jour., 1915, **2**, 137.

thin walls have big perforations, and are strengthened against collapse by a thickening band running spirally or in rings around the inside. The leaf is formed of a single layer of chambers or cells. Some of them, narrow and green, form a network of feeding cells, in the meshes of which are larger, broader, colorless cells, perforated and thickened after the fashion of those of the peripheral layers of the stem. The whole construction results in a system of delicate capillary tubes, having the effect of a very fine sponge.

The only expense connected with the use of the moss, aside from preparing the dressings, is the gathering of the material; this may be done by schoolchildren, Boy Scouts and others whose services are not otherwise utilized in the war. Before and after gathering, specimens may be submitted to experts who may determine whether the moss is of the proper variety. The upper layers of the moss are pulled up by the handful, and wrung out. The moss is then slowly dried in the open air. The dry moss, containing as it does large cells with elastic walls, is capable of absorbing and retaining liquid better than cotton, which depends on capillary attraction between the fibers. According to Porter[3] of McGill University, good specimens of dried sphagnum moss will absorb from twenty to twenty-two times their own weight of water before they begin to drip. Average moss will absorb at least twelve times its own weight, whereas absorbent cotton does not absorb more than six times its own weight of water. In the utilization of moss surgically, the dried moss is packed loosely into various sized muslin bags, which are afterward carefully sterilized either by heat or by a chemical, such as mercuric chlorid.[4] Cathcart[5] suggests that steam, whether by high or by low pressure, hardens the walls of the minute tubules of the moss, and inhibits, though it does not destroy, the absorbing power. When fluid, especially warm fluid, reaches the moss, it is again softened, and absorption takes place, but somewhat slowly. It is suggested that sterilized pads of sphagnum should be wrung out of antiseptic lotion just before use, in which case the full power of absorption is restored. As an antiseptic solution, Cathcart recommends 0.25 per cent. of mercuric chlorid. While the utilization of sphagnum moss as a wound dressing is not new, having been suggested as early as 1882, its new method of application and extensive employment as a surgical dressing would certainly not have attracted the attention of surgeons unless the shortage of absorbent cotton occasioned by a greater demand and less available room for shipment had stimulated the demand for such a procedure.

The utilization of this substance is significant of one phase of the way in which war stimulates inventiveness and original thinking. The truth of the old saying that "necessity is the mother of invention" is particularly noticeable in times of such great emergency as now stimulate the thought of scientists the world over. It was the emergency of the war which has caused the extraordinary recent developments in the chemical industry of our own country, which has stimulated certain American universities to turn their attention to the growing of digitalis for medicinal purposes, and which has induced the introduction of foods hitherto slightly used, popularized them and caused them to become a part of ordinary diet.

3. Porter, J. B.: Sphagnum Moss for Use as a Surgical Dressing: Its Collection, Preparation and Other Details, Canad. Med. Assn. Jour., 1917, **7**, 201.
4. London Letter, THE JOURNAL A. M. A., Oct. 7, 1916, p. 1105.
5. Cathcart, C. W.: Lancet, London, 1916, **1**, 820.

IS UREA FORMED IN THE MUSCLES?

Urea is the conspicuous end-product of nitrogenous metabolism in the higher organisms. The theories to account for its origin have undergone successive modifications from decade to decade in harmony with the latest chemical evidence available at successive intervals. Thus the hypotheses of the genesis of urea through oxidative synthesis and in other ways directly from proteins have gradually been abandoned. At the present moment, in the light of what is known respecting the rôle of amino-acids in the disintegration of protein and its metabolism in the body, urea is no longer regarded as a product of the entire molecule. The nitrogenous groups of the amino-acids are split off from the rest of these complexes, perhaps by enzymatic deamination. From these nitrogenous fragments, urea arises.

With respect to the place or tissues in which this reaction proceeds, opinion has likewise been vacillating. Of late there has been a tendency to assign the function of urea formation to all cells. As a recent writer has expressed it, the basis for the theory that urea formation is a function of body cells in general rather than of liver cells in particular is, of course, founded on the idea that the metabolism of the individual cell is complete in itself. Thus, in case of muscle cells, it is well known that they contain several proteolytic enzymes which actively break down the cell proteins with the production of amino-acids and ammonia, if not urea. From a quantitative standpoint the greatest abundance of active cells of a specific sort in the body is to be found in the muscular tissue which makes up so large a part of the entire mass. The idea that urea formation was centered in this great bulk of active cellular tissue was favored years ago, only to be succeeded by a preference for the liver, the largest single glandular organ of the body, as the seat of this final activity in the degradation of proteins.

There is, indeed, much weighty evidence for the importance of the liver in urea formation, though the facts by no means indicate that this organ has an exclusive function in this direction. It is conceivable that successive stages in amino-acid disintegration and reconstruction leading up to the stage of urea may go on in different organs; for example, it is not excluded

that ammonia is liberated in the muscle or other body cells and carried to the liver to undergo there a final synthesis to urea. One step in the exclusion of conflicting hypotheses lies in direct observations on the possibility of urea formation by self-contained enzymes in muscle. Such an investigation has been undertaken by Hoagland and Mansfield[1] in the Bureau of Animal Industry at Washington. The results of their studies of the products of autolytic change in aseptically removed portions of muscle tend to show, as they themselves express it, that urea formation is not an important function of muscular tissue. In view of the well established fact that the liver plays an important part in the formation of urea in the body, they add, these findings lend support to the view that urea production is chiefly a function of that organ. In the light of current evidence they give added weight, though in a very indirect way, to the view of Van Slyke and his co-workers that the liver plays the chief part in the breakdown of the amino-acids, without denying to other tissues the possession of similar power of promoting metabolic change.

Current Comment

THE ARMY HOSPITALS OF FIFTY YEARS AGO

At the present time when every noteworthy contribution of modern medical science may be expected to be put to the test of usefulness in the plans of the Army medical organization, the task of meeting a great emergency successfully is almost certain to leave unfulfilled possibilities exposed to the ubiquitous critic. To those on whom devolves the responsibility for the major part of the effort of suddenly providing for the sanitary and medical needs of a vast group of fighting units it may be comforting, if not helpful, to learn something of the fire of criticism through which the United States Army has passed in former days in respect to its barracks, hygiene and hospitals. A notable instance has lately been described by Dr. Fielding H. Garrison[2] of the Surgeon-General's Office in a review of the scientific work of the late Dr. John Shaw Billings. In 1870 and 1875, Billings made two reports to the Surgeon-General which have become classic, as far as our military establishment is concerned. In a drastic criticism of the barracks and hospitals of "the best fed and worst housed army in the world," Billings described the pictures of United States Army hospitals in the report as "simply inserted as ingenious modes of 'how not to do it'." There is vigorous opposition to the false economy which results in "a saving in boards and brick at the expense of the health of the soldier." Of more immediate interest today, however, is the substance of the constructive advice for improving the health and personal well-being of the enlisted man. Garrison has thus summarized Billings' suggestions, given in 1875: Bath tubs and shower baths, abundant space and good ventilation in quarters, a ration at least 25 per cent. in excess of what is required, plenty of ice at southern posts, lime juice and baking powder for scouts, canned tomatoes when fresh vegetables are not available, are recommended as novelties; and it is especially urged that the chief cook at a post should be a permanent detail, in place of the custom at that time of changing company cooks every ten days; that schools for instruction of cooks should be established at recruiting stations, and that a manual of cookery, with dietetic tables and culinary directions for all climates and seasons should be prepared. The report concludes with timely observations on the ventilation, hygiene and avoidance of infection in the military hospitals. Today the "novelties" here recommended have become the "staples" of hospital routine; but there is an ever-recurring abundance of new problems that demand novel solutions, and perhaps some old defects that deserve exposure. To these a new generation of trained scientists and devoted men is giving its best intellectual efforts.

1. Hoagland, R., and Mansfield, C. M.: The Function of Muscular Tissue in Urea Formation, Jour. Biol. Chem., 1917, **31**, 487.
2. Garrison, F. H.: The Scientific Work of Dr. John Shaw Billings, National Academy of Sciences, Biographical Memoirs, 1917, **8**, 385.

ADULTERATED IMPORTED DRUGS

In times of stress, it is often feared that our food and drug laws will not be vigorously enforced. It is gratifying, therefore, to note the regulatory announcements of the Department of Agriculture[1] concerning action against and detention of certain drug imports. A recent issue reports that examinations of samples of belladonna root, *Atropa belladonna* L., disclosed adulteration with roots of yellow dock, *Rumex crispus* L. Some importations of cantharides (Spanish flies), *Cantharis vesicatoria*, had been adulterated with "so-called Chinese blister flies belonging to a species of *Mylabris*." The department found cinchona barks offered for entry under names recognized in the U. S. Pharmacopeia, but deficient in alkaloids. A number of other less used drugs also were illegally labeled. Efficient government protection along these lines, especially during the war, is of benefit to the public, and is appreciated by the medical and pharmacal professions.

JERSEY VERSUS HOLSTEIN

The most striking differences between well selected dairy cattle with respect to their milk production are those attributable to the breed. It is literally true, of course, that beside breed and individuality, the period of lactation, the season of the year, feeding, care, and completeness of milking may affect the composition of the milk. Liberal feeding and exceptional care bring their reward in the form of an increased yield rather than a permanent change in the character or proportions of the ingredients of milk. We are not prepared to draw on ourselves the fire of the advocates—and they are in each case both enthusiastic and formidable—of the superiority of any of the well known

1. Service and Regulatory Announcements, No. 21, U. S. Dept. Agric., Nov. 12, 1917.

breeds of dairy cattle by appearing as the champion of some rival breed. Both the Jerseys, at one extreme of the list, yielding milk containing nearly 15 per cent. of solids, including over 5 per cent. of fat, and the Holsteins, at the other extreme, with a more abundant supply of milk averaging only about 12 per cent. in solids and 3.5 per cent. in fat, have their champions for public favor. The average weight of a Jersey is from 800 to 900 pounds, and of a Holstein, 1,200 pounds. The comparison of large and small cows is thus involved. A person with judicial temperament and motives of strict economy might be inclined to estimate the cost of the important items relating to the milk production of each breed and thus form a judgment in the matter. Precisely this has recently been attempted at the Ohio Experiment Station[1] with results that seem, strange as it may appear on hasty consideration, to justify the propaganda of both breeds. In an exhaustive study of the economy of production of dairy cows from the feed consumed, it was found that the Holsteins, when the feed alone is considered, are able to produce milk more economically throughout the entire lactation period. The difference in economy of producing solids is not greatly in favor of either breed, although the Jerseys have a slight advantage. The Jerseys have a decided advantage, however, in the economy of producing fat. If the averages for each breed for the entire lactation period are used and the Jerseys are considered 100 per cent. efficient in producing milk, solids and fat from the digestible nutrients consumed, the Holsteins were 116.5 per cent. efficient in producing milk, 93.4 per cent. efficient in producing solids, and 74.5 per cent. efficient in producing fat. This indicates that the cows yielding high-testing milk produced solids and fats more economically than those producing low-testing milk, and also that the Jerseys gave in their product a larger return of digestible nutrients for each pound of digestible nutrients consumed than did the Holsteins. Where milk is sold by measure, that is, by the quart, regardless of quality differences, the volume is an important item. From this point of view it was found that the Jerseys consumed 163 pounds of dry matter and 106 pounds of digestible nutrients, and the Holsteins consumed 140 pounds of dry matter and 91 pounds of digestible nutrients for each hundred pounds of milk produced. It is not often that all parties to a controversy can find a morsel of satisfaction in the decision of the conflicting claims.

1. Brady, R. I.: Economy of Production by Dairy Cows, Ohio Agric. Expt. Sta. Month. Bull., 1917, **2**, 334.

THE EFFECTS OF WAR ON MEDICAL RESEARCH

One of the significant effects of the war has been the turning of the attention of laboratory workers from some of the intricate, complex and wholly technical problems of research to those of immediate practical utilization and clinical bearing. These problems include efforts to secure new wound dressings; to discover serums or antitoxins to control the spread and the course of infections; to determine the causes and to discover means of prevention and treatment of those little understood conditions peculiar to the war, such as shell-shock, trench fever, trench foot, etc., and finally, to improve the methods of treatment of the common surgical conditions particularly associated with modern warfare. It is difficult to estimate today precisely the value of the procedures that have been adopted or the theories that have been advanced. The claims made for many of them, in some cases associated with an unfortunate sensational publicity, undoubtedly cause those easily swayed to form a too optimistic opinion. The meritorious virtue of some of the remedies has been lost in the clap-trap or mystery that surrounds them. Usually the value seems to reside in some already well known substances or procedures. While it is not to be regretted that enthusiasm and praise should be attached to the work of those engaged in actual warfare, overenthusiasm and false values should not be allowed to influence the opinions of scientists in an estimation of the procedures associated with the medicine and surgery of the war.

SKIN DIPHTHERIA

At Richmond, Va.,[1] during September, October, November and December, 1916, skin lesions that were at all suggestive of diphtheric infection were swabbed, and cultures were made. Also there was a wholesale swabbing of sores of all sorts. Out of 191 swabs examined, thirty-four were positive for diphtheria. This represents 17 per cent. of positive cultures, as compared with 23 per cent. positive during the preceding year. Pure cultures were isolated in eleven cases, all from schoolchildren, no two of whom were in the same family, although several attended the same school. Virulence tests in seven cases were positive. Each culture was grown on broth for about a week at 37 C. (98.6 F.) and then injected subcutaneously into the abdomens of two guinea-pigs, one of which received antitoxin. In no instance were there serious after-effects in the animal given antitoxin.

1. Annual Report, Richmond, Va., Health Department, 1916, pp. 87, 94, 95.

For Prenatal Instruction.—The Department of Health of New York City has organized a special corps of nurses to instruct, advise and guide mothers during pregnancy in all matters pertaining to the health of themselves and their offspring and to aid in the reduction of the number of stillbirths. It is found that over 40 per cent. of the deaths of children under 1 year of age in New York City are due to congenital diseases; almost 37 per cent. occur during the first month, and three quarters of these during the first ten days. Eighty per cent. of all deaths occurring during the first months of life, and 90 per cent. of deaths during the first ten days of life, are due to congenital diseases, congenital deformities and malformations, inanition, marasmus, prematurity, accidents of labor, atelectasis, infection and hemorrhage of the cord, Winckel's disease, etc. The nurses arranged for are to be assigned to the infant welfare stations, and will be assisted in the prenatal work by the regular nurses of those stations. It is hoped that the physicians will avail themselves of the services of these nurses to the fullest extent.—*Weekly Bulletin*, New York City Department of Health.

Medical Mobilization and the War

TYPHOID VACCINE SUPPLIED BY ARMY MEDICAL SCHOOL

Between April 1 and November 1, the Army Medical School Laboratory, Washington, D. C., shipped 8,843,047 cubic centimeters of typhoid and paratyphoid vaccine for use by the Army and Navy. Enough typhoid vaccine was shipped to vaccinate 1,051,604 men; enough of the paratyphoid "A" and "B" vaccine to vaccinate 777,352 men. Since July 1, a triple vaccine, including typhoid and paratyphoid "A" and "B," has been manufactured and enough of this has been shipped to vaccinate 1,489,902 men.

DIRECTORS FOR MEDICAL SERVICE WITH AMERICAN EXPEDITIONARY FORCES

Major John M. T. Finney, M. R. C., U. S. Army, has been appointed director of general surgery with the American Expeditionary Forces in France; Major Hugh H. Young, M. R. C., director of venereal, skin and genito-urinary surgery, and Lieut.-Col. Joseph Siler, M. C., U. S. Army, director of the laboratory service.

Major John M. T. Finney, professor and head of the department of surgery in Johns Hopkins Medical College, went to France as head of the Johns Hopkins Hospital base hospital unit which was among the first to be ordered to active duty abroad. He was born in 1863 and graduated from Princeton in 1884, and from the Harvard Medical School in 1889.

Major Hugh H. Young, head of the department of urologic surgery and professor of urology at Johns Hopkins University, was ordered to active duty in France in June, 1917, to investigate the establishment of a urologic service. He was born in 1870, graduated from the University of Virginia in 1893, and received his medical degree from Virginia in 1894, and from Johns Hopkins University in 1895.

Lieut.-Col. Joseph Siler is especially noted for his research on tropical diseases and pellagra, particularly with the McFadden Pellagra Research Commission. He was born in 1875, and graduated from the University of Virginia in 1898.

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES

Extracts from Telegraphic Reports Received in the Office of the Surgeon-General for the Week Ending Nov. 9, 1917

1. Total Strength of Troops 1,042,225
   Admission rate per 1,000 (disease only) ..... annual 1,236.5
   Non-effective rate (all causes) 31.1
2. National Guard—strength (camps) 369,148
   Admission rate per 1,000 all camps (disease only) .. annual 1,517.3
   Non-effective rate all camps (all causes) 38.9
   Camps showing admission rate for disease higher than average: Camps Bowie, Wheeler, Kearney, Sevier, Shelby and Cody.
   Camps showing non-effective rate all causes higher than average: Camps Bowie, Wheeler, Sevier, Kearney, and Shelby.
3. National Army—strength (camps) 428,788
   Admission rate per 1,000 all camps (disease only) .. annual 1,139.9
   Non-effective rate all camps (all causes) 25.2
   Camps showing admission rate for disease higher than average: Camps Pike, Jackson, Funston, Travis, Dodge, and Dix.
   Camps showing non-effective rate all causes higher than average: Camps Pike, Funston, Jackson, Lewis, Dodge, Travis and Dix.
4. Venereal Disease—
   Admission rate Regulars 83.5
   Admission rate National Guard (camps) ..... annual 151.5
   Admission rate National Army 115.3
   Camps National Guard having rate above average: Camps Kearney, and Wheeler.
   Camps National Army having rate above average: Camps Sherman, Travis, Dix and Jackson.
5. Number of cases of pneumonia 346
   Highest number in any one camp (Pike) 76
   Number of cases of meningitis 32
   Highest number in any one camp (Funston) 9

Medical Military Information.—A list of pamphlets of interest to medical officers of the Army will be found on advertising page 28 of this issue.

6. SPECIAL DISEASES REPORTED DURING THE WEEK ENDING NOV. 9, 1917

Division	Pneumonia	Dysentery	Malaria	Venereal	Paratyphoid	Typhoid	Measles	Meningitis	Scarlet Fever	Strength of Command
27th, Wadsworth..	1	...	...	44	...	....	....	...	...	32,025
28th, Hancock....	...	...	...	38	...	1	2	...	...	18,781
29th, McClellan....	2	...	...	19	...	...	4	...	...	26,495
30th, Sevier.....	13	...	1	45	...	...	693	2	...	27,207
31st, Wheeler.....	34	1	6	93	...	...	740	...	...	21,747
32d, MacArthur..	1	...	...	23	...	...	27	...	2	26,513
33d, Logan.....	1	1	10	66	...	...	1	...	...	28,084
34th, Cody.....	6	...	...	34	...	...	18	...	5	25,854
35th, Doniphan....	16	...	2	17	...	...	75	2	...	25,536
36th, Bowie.....	39	...	12	61	...	1	1147	...	...	25,888
37th, Sheridan....	2	...	...	29	...	...	25	...	...	24,228
38th, Shelby.....	11	...	3	46	...	...	254	...	...	24,613
39th, Beauregard..	4	...	8	27	...	...	113	...	...	11,377
40th, Kearney.....	15	...	...	362	...	...	29	4	1	23,903
41st, Mills.....	2	...	...	30	...	...	19	...	2	14,588
76th, Devens.....	1	...	...	29	...	...	5	...	...	30,194
77th, Upton.....	2	...	...	14	...	...	....	...	...	26,366
78th, Dix.....	...	1	...	56	...	1	....	...	...	19,410
79th, Meade.....	...	...	...	15	...	...	....	...	...	32,365
80th, Lee.....	4	...	1	63	...	...	1	1	...	34,686
81st, Jackson.....	11	3	10	357	...	...	370	...	...	15,414
82d, Gordon.....	5	...	...	38	...	...	28	1	...	21,427
83d, Sherman.....	9	...	1	128	...	...	3	2	...	35,058
84th, Taylor.....	5	...	...	27	...	3	154	6	...	27,579
85th, Custer.....	4	...	...	15	...	...	26	...	1	15,587
86th, Grant.....	6	...	...	21	...	...	6	1	...	26,249
87th, Pike.....	76	1	6	28	...	...	683	2	...	23,308
88th, Dodge.....	1	...	...	14	...	...	3	...	...	22,277
89th, Funston.....	24	...	...	19	...	...	64	9	...	29,821
90th, Travis.....	28	...	6	107	...	2	....	...	...	30,540
91st, Lewis.....	1	1	1	18	...	...	3	2	3	38,177

	Regulars, U. S. Army, in U. S. only, 1916		Regulars in U. S. week ending Nov. 9, 1917		Nat'l Guard, All Camps, week ending Nov. 9, 1917		Nat'l Army, All Camps, week ending Nov. 9, 1917	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Admissions, diseases only, annual rate per 1000	....	613	....	840.4	....	1517.3	....	1139.9
Pneumonia	....	2.59	22	5.4	147	20.7	184	22.3
Dysentery	....	3.97	4	0.9	2	0.2	6	0.7
Malaria	....	12.52	8	1.9	42	5.9	25	3.0
Venereal	....	91.00	535	83.5	1076	151.5	951	115.3
Paratyphoid	....	0.31	....	.....	....	.....	....	.....
Typhoid	....	0.21	....	.....	2	0.2	6	0.7
Measles	....	20.29	143	35.6	3263	451.2	1356	164.4
Meningitis	....	0.29	....	.....	8	1.1	24	2.9
Scarlet fever	....	0.59	16	3.9	10	1.4	6	0.7

7. Deaths by causes: Pneumonia, lobar, 35; bronchopneumonia, 6; cerebrospinal meningitis, 20; cerebral abscess, 1; cerebral syphilis, 1; cerebral tumor, 1; cerebral hemorrhage, 1; encephalitis, 1; hemoptysis following emphysema, 1; empyema, chronic, 1; pyemia, 1; endocarditis suppurative, 1; endocarditis, septic, 1; embolism of mesenteric artery, 1; angina pectoris, 1; measles, 1; edema of lungs, 1; alcoholism, acute, 1; delirium tremens, 1; asphyxiation, accidental, 1; accidental drowning, 1; traumatism, 3; traumatism by firearms, 5; traumatism by cutting, 1; fracture, base of skull, 3; poisoning, type undetermined, 1; suicide by phenol poisoning, 1; suicide by strychnin poisoning, 1; suicide by hanging, 1, and cause not reported, 1.

THE CAMP GREENLEAF SCHOOL OF MILITARY HYGIENE

Within the past year we have become interested in the efforts of the State Board of Medical Examiners of Pennsylvania to arouse interest in universal training in hygiene as a requirement for candidates seeking license to practice medicine.

The Pennsylvania board made this a practical fact by securing a state law which prohibits the licensing of a physician to practice medicine in that state unless the applicant has had a practical camp course in military hygiene. The bill provides, however, that this requirement is waived if the government of the United States fails to provide the necessary course.

When this camp opened, June 1, 1917, one of the ambitions of its commandant was to found a school of military hygiene on such a firm basis that it would last, not only for the period of the war, but for all time. A tiresome recital of disappointing setbacks and tribulations would profit little, and the announcement that the school is now in full operation, buil

on a foundation of permanent proportions, is the fact that we wish to set forth. The school has already begun to accumulate valuable property, such as microscopes, selected microscopic specimens, models of apparatus, books and pamphlets. In addition to this, arrangements have been completed to publish in full the valuable lectures delivered in the class rooms.

These lectures are in large part delivered by members of the student body, many of whom are specialists in some particular branch of sanitation. The school is a school plus a clearing house of knowledge. It is amazing to find how much talent drifts into these camps, and it is believed that the accumulated work of the attendants and instructors, published in book form, will make a valuable contribution to the literature of the country.

At the close of the camp, the literature and property, scheme of operation, and all other matter connected with the school, including models of sanitary apparatus, will be presented to the world's greatest sanitarian, the Surgeon-General of the Army, with the expressed hope that it may be found practical to make it a permanent benefit to the country.

A description of the school, written by the director, follows:

The Camp Greenleaf School of Military Hygiene has for its object the intensive training of Army surgeons in the field of camp sanitation.

Class work, Medical Officers' Training Camp, Fort Riley, Kan.

The basic curriculum of the school comprises didactic and practical instruction on such fundamental subjects as camp sites, draining; approved methods for the disposal of kitchen, human and animal waste; the necessity for the sanitary policing of barracks and surroundings; water supply, quality, quantity and approved methods of purification; the inspection of the mess, and mess kitchen, including the food, its mode of preparation, the means for preservation, general cleanliness, and prevention of waste; insects as nuisances, sleep disturbers and transmitters of disease; the cycle of development of the common insects, and the approved methods used for the suppression of insects; the transmissible diseases and the approved methods for their control, including isolation, disinfection and prophylactic vaccination; the diseases of camp life in the several seasons, and military administrations. The sanitary clinics are an essential feature of the instruction. These complement the didactic teaching. They are entirely practical field work. Convenient groups of student officers are assigned for duty on problems involving drainage, road construction, insect abatement, conduct of picket lines, construction and care of latrines, disposal of waste, mess kitchen inspection, construction and care of the various types of incinerators and grease traps, water purification and storage, administrative work, etc. Their work is under the critical supervision of the staff of instructors.

In addition to the foregoing routine instruction, lectures are given on cognate subjects by the staff and student members of the school. Such lectures are given in the barracks occupied by the school and only to the class in hygiene. The character of the lectures by the student officers varies with the men available in the school at the time. To illustrate: Since the school was organized, lectures have been delivered by members of the class on the following, among other subjects: pellagra; malarial fever; vaccine therapy; fleas and disease; rat proofing of buildings; customs of the service; paper work in the Army; rural sanitation; hookworm; running a mess; duties of a quarantine officer; ship disinfection; military map making (with practical work in the field); amebic dysentery; refuse disposal; typhus in Serbia; the Kentucky closet; routine work in Panama; operation of sewage disposal plants; yellow fever; first aid in sanitation; causative factors in epidemics; special quarantine measures; building disinfection (a demonstration); hygiene of ventilation; water purification; sanitation in building construction; details of sanitary inspection; military map reading.

The instruction in the school of hygiene is given in hours that do not conflict with the general instruction given to the entire student officer body, and members of the school are required to attend such instruction as well as the special instruction given in the school. While in the school of hygiene, the student is relieved from military drill, but no student officer is assigned to the school who has not had at least two weeks of such drill, and the plan, therefore, does not materially interfere with the training arranged for student officers. As with other instructional departments of the camp, quizzes are held regularly by officially appointed instructors, and the students are graded according to the progress made in the work. Weekly records of such grades are made.

The staff of instructors comprises Major Alexander C. Abbott, M. R. C., director, and Capts. William K. Evans, M. R. C., and M. L. Todd, M. R. C., assistant directors.

There are fifty students. The course of instruction covers four weeks from the date of assignment, unless it is obvious at the end of the first week that the student, for various reasons, is not adapted to sanitary work. In that event he is transferred to the company from which he was assigned, and another is detailed in his place. In the immediate future, the number of students of the company will be increased to 100, with a corresponding increase in the staff of instructors. As a saving of time, only students of Grade B and up will be assigned to the company.

Throughout, the instruction is as practical as possible, the student officers' camp, the outlying organizations, and the surrounding camps serving as excellent object lessons.

HENRY PAGE, Colonel, U. S. Army.
Commandant, Camp Greenleaf, Fort Oglethorpe, Ga.
ALEXANDER C. ABBOTT, Major, M. R. C.
Director, Camp Greenleaf School of Military Hygiene; Director, University of Pennsylvania Laboratory of Hygiene.

NEWS OF THE CANTONMENTS

Twenty-Eighth Division, Camp Hancock, Augusta, Ga.

During the past week, Captain Roux, specialist in orthopedics, has been visiting our camp and lecturing on military feet and shoes. Proper exercises in bending the ankles outward and rising on the toes were described for weak feet; dressings and modifications in shoes were described also.

The entire division is being trained in the use of the gas mask, under the direction of Captain Stone and Lieutenant Russell. Cardiac, tubercular and nerve specialists are sifting out men with defects.

The course of instruction for medical officers is comprehensive and will require considerable time for completion. We hope to complete courses in litter bearing, first aid, pack mule drills, etc., on field day. It is also planned to have an original medical article competition for medical officers.

Thirty-Fifth Division, Camp Doniphan, Fort Sill, Okla.

The arrival of 3,000 drafted men by way of Camp Funston, among whom were several men with measles, has unfortunately increased the morbidity statistics for Camp Doniphan. Two cases of cerebrospinal meningitis also promptly developed among the new arrivals, and twelve carriers were found among contacts. All were immediately placed under rigid quarantine, and it is hoped that the situation will be controlled.

The care of the sick unfortunately is still handicaped by the fact that the new base hospital, with the exception of a few wards, is not yet ready for occupancy. Construction work, however, is being pushed with all energy, and it is hoped that within two weeks a considerable number of the wards of the new institution will be ready.

LYCEUM WORK

Lyceum work under the able direction of Lieut.-Col. W. T. Davidson is progressing satisfactorily and is widely appreciated. Meetings are held Monday, Wednesday and Friday evenings. The Monday meeting was devoted to the reports of the special examining boards. Capt. Ralph Brown, for cardiovascular diseases, reported on the examination of 15,000 men since September 15, with forty rejections. Capt. Brown briefly classified the classes that come up for observation under the headings, first, myocardial; second, valvular; third, functional. The first group is practically eliminated in the type of men that come up for examination; most cases fall within the last two groups.

Lieutenant Little of the tuberculosis board reported that his board had rejected 0.03 per cent. out of 15,000 men examined since the board began its work here in September. The number of these rejections, he said, is likely to increase as the facilities for examination improve. At present the work has to be done under considerable difficulty, and does not permit of the refined diagnoses possible under the best circumstances.

Lieut. Thomas Heldt of the psychiatric board reported on the work of his board. Since September 4, 15,000 cases were examined, with 1 per cent. of rejections. The type of cases were found in the following order of frequency: mental deficiency, constitutional psychopathic state, psychoneuroses, nervous disease and injuries (including the epilepsies), inebriety (alcoholism and drug addiction), and psychoses.

Wednesday's meeting was devoted to short talks by the chiefs of staff of the base hospital. Major P. B. Connelly, in charge of the base hospital, briefly explained the organization and present facilities of the hospital, and assured the men of the field of his heartiest cooperation through the personnel of his command.

Major J. Barksdale, chief of the surgical staff, called special attention to the need for careful examination of men complaining of "pain in the belly." Too often these cases prove to be appendicitis, which is brought to operation under a serious handicap. He cautioned against the administration of purgatives in cases of suspected appendicitis. The records of the surgical department give a splendid showing with 389 operative cases since September, 150 of which represent major work, with but one death.

Major Sidney Strauss of the department of internal medicine discussed briefly the symptomatology and diagnosis of the diseases encountered at this camp thus far. He urged that all patients with a temperature of more than 100 F. should be transferred to the hospital.

Major Magruder of the eye, ear, nose and throat department called attention to the relatively large number of disease carriers (diphtheria and Vincent's angina) that were found among those referred to his clinic. He advised that men with chronic middle-ear infection should be recommended for discharge, since surgical interference cannot improve them for service in the Army.

Major G. C. Ruhland, in charge of the laboratories, spoke briefly on methods of securing and transmitting specimens for laboratory diagnosis.

Lieutenant Hoffmeier, roentgen specialist, and Lieutenant Woods, dermatologist, also spoke briefly on matters relating to their specialties.

Friday's meeting was given over to a paper on camp sanitation by Major Phillips, chief sanitarian of the division surgeon's staff. Major Phillips admirably covered the essentials of camp sanitation and hygiene; his paper was received with a great deal of interest and was profitably discussed.

The discovery of a second case of anthrax, also occurring on the patient's face, suggests the possibility of anthrax infection from shaving brushes, and special attention is being directed toward this possible source of infection.

PERSONAL

Colonel Lewis of the Regular Army and Major N. M. Black, M. R. C., have arrived in camp on an inspection tour of National Guard and Army camps.

Lieut.-Col. Robert Carswell of the Regular Army has arrived and has taken charge of the administration of the post hospital.

Thirty-Ninth Division, Camp Beauregard, Alexandria, La.

Many changes in the Medical Department of the camp have taken place. Many more troops have arrived; there are now more than 20,000 here, and the number of medical officers has increased to over 100. Owing to the fact that 9,000 draft men have been sent here from Camp Pike, who brought with them from that place the remains of a rather extensive epidemic of measles of a mild form, and furthermore owing to the fact that these men are distributed throughout the various organizations of the camp, a rather rigid quarantine is in force. Two field hospitals are now in operation, one taking care of the measles and the other one handling the mumps of the camp. This relieves the base hospital of congestion and allows it to take care of the more seriously ill.

Col. Henry C. Fisher, M. C., inspector from the Surgeon-General's Office, spent two days here making a general inspection of the entire medical department, including the sanitary conditions.

On November 12, Captain Gephart of the Surgeon-General's Office visited the camp on a tour of inspection in the interests of food conservation.

Captain McMillan of the Surgeon-General's Office made a tour of inspection on November 15, in the interests of the venereal work of the camp.

The entire body of medical officers of the camp was invited to attend a meeting of the Rapides Parish Medical Society on November 6. (It will be noted that the term "parish" is employed in Louisiana instead of "county.") The meeting was held in the city hall, and about fifty medical officers and about fifteen local civilian physicians were present. Mayor Whittington of Alexandria told the officers that the city administration would give them every possible aid in sanitary matters, and was roundly applauded. P. A. Surg. H. S. Smith of the United States Public Health Service, who is in charge of the sanitation of the extra-camp area, gave a very interesting talk on the work he and his assistants are doing. Contract Surgeon Wright of Monroe, La., who has been on the tuberculosis board, told of his experiences with the intravenous administration of quinin in malaria. Short talks were also made by Colonels Smart and Schauffler, and Majors Lull, Burrus and others. After the meeting the guests and their hosts adjourned to the banquet hall of the Hotel Bentley where a delightful supper was served which was thoroughly enjoyed by all.

BASE HOSPITAL NOTES

The base hospital has been running in full swing for some weeks and there are now about 400 patients quartered there.

The laboratory is exceedingly well equipped and excellent work is being done. One deficiency is that it is not equipped to perform the Wassermann test. Specimens of blood and spinal fluid for this test are sent to the department laboratory in Atlanta, Ga., and from five to seven days elapse before a report is returned. This causes a great deal of inconvenience, and it is hoped that before long the base hospital will be equipped and authorized to perform this test.

Only two cases of epidemic cerebrospinal meningitis have developed in camp. Both are being treated in the base hospital.

The operating pavilion was opened recently and already several operations, both major and minor, have been performed.

The venereal section occupies two wards and has been practically full for some time. Only the acute cases are kept for treatment, all chronic cases being returned to their commands for treatment in the regimental infirmaries. A large percentage of the patients contracted the diseases before coming to camp, and it is thought that as soon as all of the troops have arrived and have settled down to the routine of intensive training the venereal rate will drop materially.

Lieut. Adrian Landry, who was home on a month's sick leave, recently returned greatly improved in health. He has been assigned to the laboratory.

Seventy-Seventh Division, Camp Upton, Yaphank, N. Y.

Undoubtedly the most important medical event that has taken place in Camp Upton during the past month has been the removal of the base hospital from its temporary barracks to the new hospital unit. This group of some seventy buildings is located about two miles from the camp proper, so that the transportation of patients from the camp to hospital and back affords considerable valuable practice for the ambulance companies, which undertake the major part of this work.

The hospital is not finished, and but twelve wards are completed and occupied. The quarters for the enlisted men are practically completed, and though not yet supplied with steam heat, they are reasonably warmed by stoves. The men are supplied with assembly rooms, a point that thus far has been utterly neglected in the officers' quarters, which are not yet ready for full occupancy. Most of the officers, for the time being, are lodged in the receiving pavilion. It is much to be regretted that no provision has been made in the hospital for an assembly room for officers in which a library and rest facilities are provided, but we are informed that this matter is to be considered favorably later, and that ample provision has been made for standard medical books and journals.

The pleasure of moving into the new unit has been greatly dampened by the edict, which applies alike to patients, enlisted men and officers, that there is to be no smoking in or about the hospital unit. That such a ruling is absolutely necessary in buildings of this type, and particularly in the unfinished state with much inflammable material lying about, is obvious; but the lamentations of Moab for her children was joyous beside the wail that has gone up from the base hospital, and during off moments the surrounding roads are crowded with disconsolate men and officers seeking solace in the weather outside plus nicotin, rather than relative comforts inside minus tobacco. It would seem too much to expect that optimism should reign within the walls of the hospital at such a time of famine, but none the less the spirit that seems to imbue the men of the staff is anything but depressed.

The messing facilities in the unit are as yet incompletely developed, but are quite adequate for the immediate needs of the service. Luxuries, in the way of crackers, cookies, jellies and preserves, are being contributed in great generosity by the women of New York and particularly by those of the adjoining towns. It is notable, as compared with former occasions, that contributions of this nature are almost without exception sensible and well adapted.

INSTRUCTION OF HOSPITAL STAFF

Courses of instruction of the base hospital staff are being conducted, mostly by the members of the staff under the immediate direction of Major Jay D. Whitham, while that of the medical organizations within the camp proper are under the control of Lieut.-Col. Reynolds. These courses cover military-medical subjects, and paper work—which is so very needful in all military establishments—in addition to the usual professional work and subjects. After the hour of evening instruction, a short session of clinics is conducted, cases of particular interest being brought in, demonstrated, and discussed by the members of the various services.

DISEASE INCIDENCE

Comparison with the sick percentage of the other National Army cantonments shows that Upton is particularly fortunate in nearly all particulars. Our relatively low rate of venereal infections has excited considerable comment, and those cases of this class reporting at the regimental infirmaries and at the base hospital, with few exceptions, are instances contracted before entering the military service.

Stations for venereal prophylaxis under the command of the medical staff of Upton, and attended by the men of the hospital detachment, have been established in New York and Brooklyn. Similar measures are contemplated for certain of the villages nearer the encampment. Through these, and the full instruction of the men of the command, it is hoped to obviate any serious problem in this respect.

EXAMINATION OF RECRUITS

Much of the time of the medical staff of the main camp is still occupied in the examination of recruits. A careful tabulation of this work is being kept by Lieutenant Freeman, which affords some very interesting data. Forty-two medical men working at one time have been able to examine on an average of 267 men per hour, including the special examinations, which frequently consume much time. The staff of examiners is working in three shifts of from four to five hours each. They are assisted by a total number of 180 enlisted men. The total staff of examiners consists of eighty-four regular examiners and nine specialists.

Defects in vision have been by far the most frequent cause for rejection at Upton; chronic purulent otitis media has been the second most frequent factor, hernia the third, organic heart disease the fourth, and defective and deficient teeth the fifth.

DISTINGUISHED GUESTS

Distinguished medical visitors to the camp have been Colonel Shaw, inspector of base hospitals; Colonel Reynolds of the Surgeon-General's Office, best known to us as brother of "our" Colonel Reynolds; Dr. Davenport, the distinguished biologist, who has assisted us regularly in certain of our examinations, and Major E. K. Dunham, whose researches on water purification, and in association with Dakin of the chlorin methods of disinfection, are promising such flattering results. Several days ago Major Flexner of the Rockefeller Institute paid the camp a brief visit. Major Webb, commandant of the Bellevue Hospital Unit, and Major Leon T. Le Wald, instructor in roentgenology, both retired officers of the regular service who have generously reentered at this time of crisis, are guests at the base hospital. Dr. Glentworth Butler and Dr. Tasker Howard of Brooklyn have been working as cardiovascular experts with us, and their return home is much regretted by us all, in both personal and professional respects.

Eighty-Fifth Division, Camp Custer, Battle Creek, Mich.

Special instruction and preparations are being formulated by the division surgeon for the rapid and complete examination of the increment of the draft that is expected this week. It is expected that the entire work of examination will be completed in two weeks. Special arrangements have been made by the division surgeon so that all medical officers will be given an opportunity to become familiar with the paper work necessary in handling these examinations.

During the last week courses for instruction for all medical officers have been progressing rapidly. Captain Donnelly and Lieutenant Drowne have been giving talks on the medical paper work and that pertaining to the Quartermaster Department, respectively. Majors Bremerman and Jackson, directors of field hospitals and ambulance companies, gave practical talks relative to their special work.

Major Wood, commanding officer of the base hospital, has arranged for special instructions three evenings a week. This consists in the work of medical organizations in actual combat, in reports on military surgery as found in the various medical journals and in clinics held by the officers of the base hospital on cases of military interest. The evening classes have proved of exceptional merit and are attended practically by every medical officer in camp.

NOTES

Capt. Constantine MacGuire, commanding officer of the Three Hundred and Thirty-Seventh Ambulance, was relieved from duty at Camp Custer and ordered to report at Camp Mills.

Major J. F. Edwards has reported as chief sanitary inspector to fill the vacancy left by Lieut.-Col. W. A. Powell, who was ordered to Camp Devens.

Major Lewis Wine Bremerman, director of field hospitals, addressed the Kalamazoo Academy of Medicine, November 13, on the subject, "What the Medical Profession Owes the Country." There were about thirty-five members present. The meeting was preceded by a luncheon in honor of Major Bremerman.

A board of experts on tuberculosis has arrived in camp and their work of examining all men in the camp is progressing rapidly.

Lieutenant Tyner of Field Hospital No. 339 is absent in the East on a five-day leave of absence. It is understood that he may have a bride with him on his return.

Lieutenant Morris of Field Hospital No. 338 is on leave, visiting in Detroit.

The rate of venereal disease is decreasing remarkably in this camp. Last report showed 1.85 per cent. covering all forms of disease of this character. These facts speak well for the moral standing of the division.

Eightieth Division, Camp Lee, Petersburg, Va.

BASE HOSPITAL NOTES

The hospital is nearly completed, and the operating rooms are in such a state of completion that they are used daily for all kinds of operative cases. The successful opening of the operating room is due, in a great measure, to the untiring energy of the operating room nurse, Miss Byrnes, whose originality and adaptability have hastened its opening.

The force of nurses who are to care for the hospital patients is augmented from day to day by new arrivals; thus far they number twenty-six. About seventy-five are expected when all have reported.

There are some queer bed fellows in the receiving ward barracks, now temporarily occupied by the base hospital surgeons. Lieut. J. J. Beaton, M. R. C., made a hurried and undignified exit from his bed at 1 a. m., bringing with him all the bedclothes and a 6-inch slider terrapin (*Pseudemys rubriventris*) that some thoughtful friend had deposited in his bed earlier in the evening. The evening recital of yarns by the noted liars is still kept up. Gulliver and Baron Munchausen would blush with envy and chagrin could they be present. Hampton M.D.'s will recognize the chief Ananias.

Officers of base hospital, Camp Lee, Va. From left to right: lower half row, Major Ferdinand Schmitter, M. C., U. S. Army; Major E. W. Day, M. R. C.; Major Joseph W. Hope, M. R. C.; lower full row, Major William E. Peple, M. R. C.; Major Samuel B. Moore, M. R. C.; Major Lawrence Litchfield, M. R. C.; Major J. B. Clark, M. R. C.; Capt. Beverly R. Kennon, M. R. C.; Capt. L. E. Hetrick, M. R. C.; second row, Capt. Lauren Thomas, M. R. C.; Capt. Henry B. Gillen, M. R. C.; Capt. Edward M. Parker, M. R. C.; Capt. Henry R. Weston, M. R. C.; Capt. Hugh Beebe, M. R. C.; Lieut. P. C. Riley, M. R. C.; Lieut. J. J. Beaton, M. R. C.; third row, Lieut. Nathaniel Barnard, D. R. C.; Lieut. Clay M. Easter, M. R. C.; Capt. Edwin A. Merritt; Lieut. I. H. Goldman, M. R. C.; Lieut. F. B. Humphreys, M. R. C.; Lieut. Samuel E. Lambert, M. R. C.; Lieut. Clarence S. Yoakum, S. C.; top row, Capt. W. S. Hunter, M. R. C.; Lieut. Edward S. Jones, S. C.; Lieut. Thomas S. Lee, M. R. C.; Lieut. T. F. Smith, D. C.; Lieut. F. J. Smith, M. R. C.; Lieut. H. A. Rothrock, M. R. C.; Lieut. C. H. Perry, S. C.; Lieut. W. S. Hunter; Lieut. R. L. Davis, M. R. C.; Lieut. George R. Moffitt, M. R. C.

The roentgen-ray outfit has been set up by Captain Merritt, M. R. C., and Lieut. Victor Noel, S. C., and some excellent pictures have already been taken. The laboratory is doing great work and materially aiding the whole staff by prompt and rapid reports. Men exposed to meningitis are now being examined for carriers. The new quarters for the hospital staff are ready for occupancy and the officers are moving in. Major Hope reports that on a recent visit to the Chesapeake region he found the oysters in prime condition and of excellent flavor, and that he ate a barrel on the half shell to be sure that they were.

The base hospital staff has been delighted and very much improved in every way by the presence of Mrs. Ferdinand Schmitter, the wife of the commanding officer, and her sister, Miss Bradstetter, who have added the charm of social life to the camp.

The first of the regular weekly clinical meetings was held at the base hospital, Thursday evening, November 8, and was attended by all the medical officers of the base hospital and the division. Major Ferdinand Schmitter, M. C., presided. The meeting was under the direction of the chief of the medical service, Major Lawrence Litchfield, M. R. C.

Contract Surgeon Thomas S. Lee presented a case of dexiocardia, the only case detected in the examination of 40,000 recruits. Major Schmitter stated that in the examination of 40,000 recruits at Fort Slocum, one case of dexiocardia was diagnosed.

Lieutenant Phails then showed a case of lichen planus, and one of pityriasis rosea. The discussion of the latter case elicited the fact that a positive Wassermann test had been obtained in a number of cases of pityriasis rosea. Two interesting abnormal gaits were demonstrated by Major Litchfield; one was possibly sacro-iliac disease; the other patient had an unusual rolling gait, walking on the outer side of the feet, no change in sensation or reflexes, and no abnormality in the joints. This case was believed to be one of hysteria.

Lieut. P. C. Riley, M. R. C., of the medical staff, told of the number of cases of communicable disease treated in the base hospital since it was opened: thirteen cases of lobar pneumonia, with no deaths; four of typhoid fever (infection prior to arrival), with one death; seven of meningitis, with one death; one of scarlet fever; two of chickenpox; twenty-two of mumps, and twenty-six of measles.

The subject of the evening was cerebrospinal meningitis, the clinical features of which were discussed by Major Litchfield. Lieut. E. J. Asnis, M. R. C., then discussed the subject of meningitis carriers and method of detection. Lieut. F. B. Humphreys demonstrated the brain of the patient with meningitis that had died, and made some interesting remarks on the different immunologic reactions of the different types of meningococci.

Eighty-First Division, Camp Jackson, Columbia, S. C.

We have moved to the base hospital. A more beautiful and healthier site could hardly be found. To stand on the misty hilltop to welcome the glorious sun and fill the lungs with pure air makes a man thankful that he is an American, beginning his real duty to the world.

ORTHOPEDIC WORK

Among the specialists who are visiting Camp Jackson is Capt. J. T. Rugh, M. R. C., Philadelphia. Prophylaxis along orthopedic lines is being organized in Camp Jackson; lectures pertinent to the care of the feet, joints and spine are given to the medical and line officers of every brigade and of independent organizations. The instructions deal purely with the soldier; every effort is directed toward rendering him more efficient by personal attention to the fit of the shoes, proper manner of walking, and strengthening of his foot and leg muscles by graduated exercise, and greater emphasis is placed on the importance of this care during the first six or eight weeks of his training. The care of the shoes, stockings and feet is also taught to the officers and by them to their men, and everything that will contribute to greater efficiency is being utilized in all channels.

Captain Rugh is supervising orthopedic surgeon in charge of five camps in North Carolina, South Carolina and Georgia, and his work and efforts are meeting with the heartiest cooperation among the officers in all organizations. A daily orthopedic dispensary under the care of Lieutenant Garrenton has been established. Foot inspection of all in the camp will be made, and potential disabilities will be recognized early and prevented by proper means.

TUBERCULOSIS AND CARDIAC SERVICE

The Medical Department of the government is doing a great service for the people of America. A board for the special examination of all members of the command for pulmonary and cardiac defects began work in camp this week. It consists of Major Boyce, M. R. C., Pittsburgh, president; Lieuts. Leopold Shumaker, Edgar W. Cowan, Owen S. Deathridge, Ephraim Goldman, Urban H. Reidt and Edward N. Packard, and Surgs. Howard Van Renssellaer, John R. Williams and Hugh F. Keating. Recently Major Boyce addressed the meeting of the base hospital lyceum on the pathology and diagnosis of tuberculosis, laying especial stress on the value of close coordination between clinician and roentgenologist. Major Herrick, chief of the medical service, will have the cooperation of this board in this service.

PERSONAL

The new commander, Major Thomas J. Leary, who recently returned from Panama, where he was chief surgeon in command of the Colon Hospital, has taken firm hold on the base hospital, and things are moving with a swing. Visiting him are his wife and child from Philadelphia. Mrs. Leary, being the wife of a Regular Army man, has been his companion in Panama and the Philippines.

The wife and the daughter of Captain Baeslack, chief of the pathologic laboratory, are visiting in Columbia. Captain Baeslack has done original work on cancer, sarcoma, syphilis and other diseases.

Dr. F. Victor Laurent, formerly baritone of the Paris Opera, Covent Garden and Metropolitan companies, joined the Medical Reserve Corps last April as first lieutenant, and after a course of training at the medical officers' training camp at Fort Oglethorpe was sent to this camp to make examinations in his speciality, otolaryngology. Lieutenant Laurent is now stationed at the base hospital, and in addition to his medical and military duties is teaching his fellow officers French conversation, and finds time to sing occasionally in some of the churches in Columbia. Several weeks ago he sang "It is Enough," from "Elijah," at Trinity, and repeated this the following Sunday at the First Baptist Church by request of Lieutenant-Governor Bethea, who is a warm admirer of the Mendelssohn oratorio. The doctor had arranged for some joint recitals with Yvonne de Treville, the distinguished colorature soprano, for this season; but after accepting his commission, these engagements were canceled. It is possible, however, that they will give a joint recital at the camp during the winter.

Lieutenant Laurent lived for five years in Paris, and is anxious to get to the front where many of his old comrades now are.

Major J. Stone, chief of the surgical service, received his commission in October.

Captain Pendleton of Portsmouth, Va., has just received his commission as captain.

Mrs. Burton Chance, wife of Captain Chance, and son recently visited Columbia and Camp Jackson.

Lieut. Harry Judge of Albany, N. Y., has been assigned to the ophthalmologic department.

Major Greenwood has visited Camp Jackson and other cantonments in the interest of eye departments.

Eighty-Fourth Division, Camp Zachary Taylor, Louisville, Ky.

FOOD WASTE

Numerous letters have been received by the daily press in Louisville, attributed to German propagandists, in which it is charged that food by the wholesale is being wasted at Camp Zachary Taylor. Some of the letters have been turned over to the intelligence section of the general staff of the Eighty-Fourth Division for investigation. It is a fact that the garbage contractor who expected to get 60,000 pounds of garbage daily from the entire camp is receiving only 8,000 pounds, which of itself shows that waste is at a minimum. The problem of saving food, until recently, has fallen on Major Luther Poust, chief sanitary inspector, who has under his direction six lieutenants of the Medical Reserve Corps who make the rounds of the camp every morning and see that all sanitary rules are obeyed, and that nothing is found in the garbage cans other than what should be there. In addition, a commissioned officer must be in attendance when mess is served, to prevent waste.

Here are a few of the instructions that every mess sergeant and cook must follow in his kitchen: The portion of bread bitten by a soldier must be cut off, placed in the oven and sterilized, and saved for bread pudding and meat dressings; oatmeal and corn grits must be saved for puddings and dressings; bones, after the meat is removed, are saved and boiled for soup; all left over meats and fats are boiled and rendered, and used for frying and flavoring.

A soldier is expected to eat as long as he is hungry, just so that he does not waste.

A commissioned officer is on duty at the garbage incinerator, and closely observes every can that comes there. The inspection of garbage does not at first thought seem to be a very important duty for a medical officer to perform; yet this is one of the most important functions of the Sanitary Corps. Lieut. Lee Ernstberger of Louisville is one of this corps detailed for the inspection of garbage, and reports that there is no waste at the camp.

Orders were issued, November 6, designating Col. J. H. Allen as food conservation officer of the cantonment. Under the orders, all regimental, battalion and independent unit commanders must submit every ten days, commencing November 10, a report to the food conservation officer showing the amount of fresh and canned beef, fresh pork, bacon, bread, sugar and lard used by their respective commands, and this report must embody also the respective strength of the commands. Mess officers will be required to keep a daily report showing the number of meals prepared for officers and those actually served, together with the amount used of the foregoing foodstuffs. The order enjoins every enlisted man to do all in his individual power to prevent waste of food. One of the regulations of the sanitary corps is that garbage cans be kept within the screened kitchens, in this way flies being reduced to a minimum. Garbage cans are chemically treated and steamed, eliminating entirely the sour smell ordinarily present in these cans.

MEASLES

The entire Three Hundred and Thirty-Sixth Infantry, composed almost entirely of Kentucky soldiers, has been quarantined on account of an epidemic of measles. Eighty-one cases have been reported from this regiment. They came in so fast as to swamp the base hospital, and a company barracks in the regimental confines was requisitioned for a temporary hospital. The quarantine order applies to officers and men alike, not a man being allowed to leave the regimental area. The epidemic began three weeks ago and was traced to a drafted man in whose home there was a case of measles when he left for the camp. Practically every company has had men affected. The disease generally has been in a mild form. One death has resulted from a complicating bronchopneumonia. Practically none of the men from Louisville have had it. The quarantine order prevented a number of Louisville men obtaining leave in order to vote.

On the first evening of the session of the Kentucky State Medical Association, the members heard a stirring patriotic address by Governor A. O. Stanley, given especially before the medical members of the draft examining boards of the state. At the conclusion of his address, three members of the reviewing board at Camp Zachary Taylor were called on to explain in brief in regard to the chief causes for final recommendation for rejection by the reviewing board. Major Walter Hamburger, president of the board, called attention to the fact that approximately but 5 per cent. of all troops received were rejected, a smaller percentage in comparison with nearly all of the other camps. The division surgeon had stated that probably many men were accepted, with perhaps no visible or demonstrable lesion, who were in such a general physical condition, perhaps of malnutrition, that they would finally not make good soldiers.

Major Hamburger mentioned, as among the most frequent causes for rejection, hernias, flatfoot, trachoma, congenital amblyopia, tuberculosis, asthma, chronic valvular disease of the heart, and active syphilis.

Lieut. Willard J. Stone, in charge of the cardiovascular examinations, reported that of 201 heart patients, 43 per cent. had been rejected. Of this number, mitral regurgitation caused 54 per cent.; mitral stenosis with regurgitation, 16 per cent.; simple tachycardia, 10 per cent.; hypertension, 7 per cent., and hyperthyroidism, 5.7 per cent. A large number of men with accidental or functional murmurs were referred to the board by the regimental surgeons, and 35 per cent. of these were accepted. He mentioned the effort test that was used in these heart examinations, the pulse rate and blood pressure being taken with the patient recumbent; then with the pressure cuff in position, the soldier is caused to take 100 short hops on alternate feet, the blood pressure being then taken within fifteen seconds after the effort. The ratio of rate and blood pressure before and after effort is carefully

recorded and compared. If the rate increases inordinately while the blood pressure does not, the candidate is not fit to serve.

DIVISION SURGEON'S REPORT

The report of the division surgeon, November 11, shows a total of 550 patients in the base hospital, and 420 under treatment in the regimental infirmaries. The venereal cases show 475 cases of gonorrhea. Venereal prophylaxis was given 126 times. Twenty per cent. of all sickness in the command is venereal. In the base hospital are nineteen cases of pneumonia, with no new cases; three cases of parotitis; four of meningitis; four meningitis carriers, and 186 cases of measles. November 10, 3.27 per cent. of the command were ill. The lowest rate was 1.67 per cent.

The first meningitis carrier slept next to the first man who developed meningitis, and has remained well, as have the other three carriers. These men have been treated by the dichloramin-T solution and are now free of organisms.

The reviewing board up to November 11 had rejected 1,689 men.

Diphtheria developed in the Three Hundred and Thirty-Third Infantry, and cultures were taken from the throats of all the rest of the men and were found negative. In the future the Schick test will be used, as the diphtheria toxin is now on hand for that purpose.

The entire Three Hundred and Thirty-Sixth Regiment of Infantry is quarantined for measles, and one battalion of four companies in the One Hundred and Fifty-Ninth Depot Brigade.

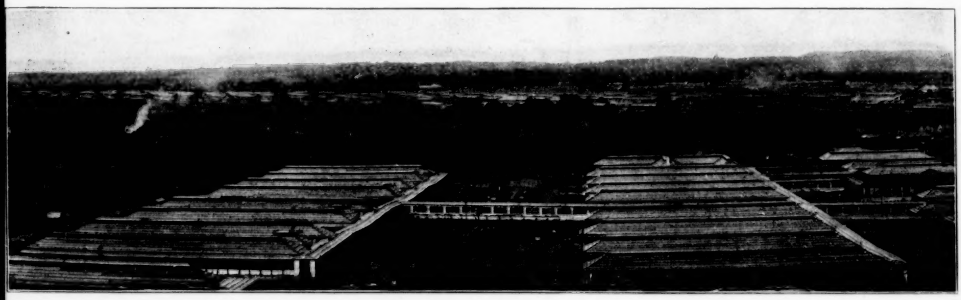
Capt. Herbert Fox and Mrs. Fox have been called to Philadelphia by telegram announcing a serious injury to their son caused by an automobile.

Eighty-Sixth Division, Camp Grant, Rockford, Ill.

Specialists have been assigned to the camp for consultation on doubtful cases so that in every questionable case the patient may have the benefit of an expert's opinion. Tuberculosis is especially looked for and the following method has been effective in finding mild and incipient cases:

An enlisted man makes out the roster of the company, using a separate slip for each man. This slip has the man's name, rank and organization, pulse and temperature, and the heart and lung findings. Half an hour before the appointed time, four enlisted men go to the barracks and take the pulse and temperatures, which they record on the slip. The examining board goes to the barracks and examines the men. Each man strips to his waist and stands by his cot with his slip. This method creates very little confusion and inconvenience. Positive or doubtful cases are referred to the tuberculosis expert who is attached to the base hospital. It takes about five minutes to examine a man's chest, and each examiner can examine about seventy-five a day. When heart cases are found, the patients are referred to the cardiovascular expert, who is also attached to the base hospital.

The Base Hospital Medical Society is organized, and holds weekly meetings at which papers on various subjects are read.



Base hospital, Camp

No communicable diseases have been encountered among the 4,500 horses and mules received at the remount station, and from there distributed to the various regiments.

PERSONAL

The president-elect of the Kentucky State Medical Association, Dr. Phil Stewart of Paducah, the retiring president, Dr. Milton Board of Louisville, and the secretary, Dr. Arthur T. McCormack, are members of the Medical Reserve Corps, in active service. The orator in surgery, Dr. Fred L. Koontz of Louisville, was unable to be present on account of a special detail to a point of instruction.

First Lieuts. Lauren N. Lindenberger and Walter S. Wyatt, medical officers, have reported at headquarters in compliance with orders from the War Department, and have been temporarily assigned to the base hospital. They came from Camp Shelby at Hattiesburg, Miss.

The second evening session of the Kentucky State Medical Association was devoted to a military symposium. The special speaker was Dr. George Loewy, representing the French Army, who showed a number of slides of wounds, before, during and after treatment by the Carrel-Dakin method. Lieutenant Holstein read a paper on cerebrospinal meningitis; Major Jump of Philadelphia, from the Surgeon-General's Office, made an impassioned plea for more recruits for the Medical Reserve Corps; Major Poust told of the work of the Sanitary Corps at Camp Zachary Taylor, and Lieut.-Col. John Allen gave a summary of the work of the reviewing board.

Lieut. Willard J. Stone, contract surgeon, left for his home in Toledo, Ohio, on special leave, to return on call from the camp division surgeon.

Eighty-Seventh Division, Camp Pike, Little Rock, Ark.

With the exception of the base hospital, practically all the buildings at Camp Pike have their heating plants in good working order. The men both in barracks and in the officers' quarters were very comfortable during the recent cold spell.

Men leaving here for National Guard camps in the South, as they have been doing in large numbers for the past few weeks, did not depart with any special enthusiasm, knowing that they were leaving the land of heated wooden barracks and hot shower baths for a country of tents and "cold gray dawns" with no heat.

There is a feeling of great relief that the War Department's ban on reserve corps commissions has apparently been lifted, as commissions are beginning to arrive, notice of the recommendations for which were issued just prior to the institution of the embargo.

There are at Camp Pike nearly 200 medical officers, including those at the base hospital. A large percentage of these are from the training camps at Forts Riley and Oglethorpe.

PROMOTIONS

Many of these officers have been in the service nearly six months. The five promotions recently reported in these columns are from the last class, and are the only promotions received in this class at this camp. Promotions for medical men in this cantonment have not averaged 5 per cent. to date since the cantonment was opened. It is generally conceded that the matter of promotion of medical officers has not been overdone.

Many entered the service with a sort of unofficial understanding that they would be promoted at the end of ninety

days' active service. The members of the old Medical Reserve Corps who were the first to enter the service, without the stimulation of whose example it would have been more difficult to get things started, are apt to feel that their claims for recognition should be considered before those who came in later. It is generally recognized, however, that under the tremendous pressure of the great work essential to the building up, officering and equipping of the Medical Department of so great an army, it is difficult to be absolutely fair to all concerned.

LECTURES

Lieut.-Col. Robert M. Thomburgh, division surgeon, gave an interesting and illuminating lecture on customs of the service at a lyceum held at the base hospital on the evening of November 5. Colonel Thomburgh brought out clearly that there are a good many things not covered by army regulations which are still important to know if the new medical man wishes to conduct himself as an "officer and a gentleman" while on duty.

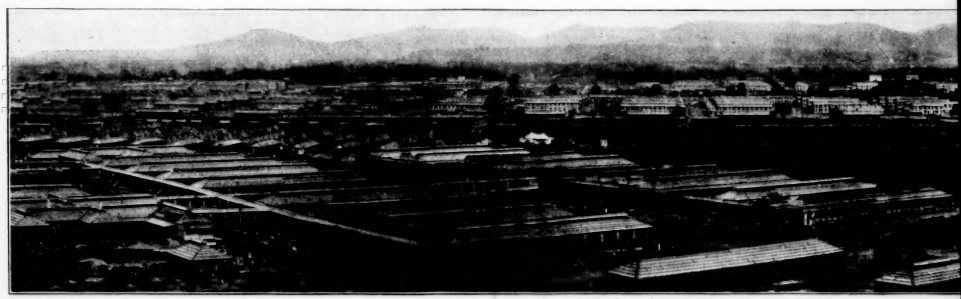
Lieut. E. T. Wentworth of the orthopedic staff at the base hospital gave a series of three lectures on the foot recently at the officers' lyceum. Lieutenant Wentworth divided the subject by lectures into anatomy, diagnosis and treatment.

MEASLES

The measles epidemic at Camp Pike continues unabated. There was an apparent lull in the contagion for a short period, but at present there is a large number of these cases. The base hospital has found it too great a burden to look after them, so an order has been issued requiring each area to take care of its own cases as long as they are of the mild type without serious complications.

HEMORRHAGIC SEPTICEMIA OF MULES

An epidemic of hemorrhagic septicemia has kept the veterinary section of the Medical Reserve Corps, stationed at Camp Pike, busy for some time past. A quarantine covering several weeks has just been partially lifted at the auxiliary remount depot, the sanitary train receiving this week part of its quota of mules. There are over 10,000 animals at the remount depot. The deaths from hemorrhagic septicemia have totaled about 200. The serum treatment was used as a prophylactic in combating the disease.



Sherman, Chillicothe, Ohio.

ORDERS TO OFFICERS OF THE MEDICAL CORPS

Col PERCY M. ASHBURN, Major SAMUEL S. CREIGHTON, Major CONDON C. McCORMACK, relieved at Fort Benjamin Harrison, Ind., and to proceed *to Washington, D. C.*, for duty in the office of the Surgeon-General of the Army.

To Camp Greenleaf, Fort Oglethorpe, Ga., for duty as instructors, from Fort Benjamin Harrison, Ind., Lieut.-Cols. A. W. SHOCKLEY, GEORGE H. SCOTT; Majors JOSEPH E. BASTION, TAYLOR E. DARBY.

To Fort Riley, Kan., as instructors, from Fort Benjamin Harrison, Ind., Lieut.-Col. HENRY F. PIPES, Major HOWARD McC. SNYDER.

Col. WILLIAM STEPHENSON, Headquarters, Central Dept., Chicago, Ill., *to Governors Island, N. Y.*, for duty as department surgeon.

Col. HENRY I. RAYMOND, Medical Supply Depot, Fort Mason, Calif., *to Chicago*, for duty.

Lieut.-Col. WILLIAM A. POWELL, relieved at Camp Custer, Battle Creek, Mich., and *to Camp Devens*, for duty as division surgeon.

To be relieved from Philippine Dept. and *to San Francisco*, and *to Western Dept.* for assignment to duty, Majors LANPHEAR W. WEBB, ALEXANDER W. WILLIAMS.

Major LEOPOLD MITCHELL, relieved from Hawaiian Dept. and *to San Francisco*, Western Dept., for assignment to duty.

Major JOHN P. FLETCHER, now on duty at Motor Ambulance Supply Depot, Louisville, Ky., be directed to proceed on completion of his present work at that place, of inspecting motor ambulance spare parts equipment, to Pontiac, Mich., for the purpose of inspecting motor ambulance equipment, and on completion of this duty to return to his proper station.

Col. GEORGE E. BUSHNELL to the following named camps for the purpose of inspecting the work of tuberculosis examiners, Camp Beauregard, Camp Pike, Camp Funston, Camp Dodge, Camp Grant.

Col. LOUIS A. LaGARDE, *to New York City* to present eight lectures on military medicine and camp sanitation, and additional lectures on military surgery at the University and Bellevue Hospital Medical College, New York University.

Lieut.-Col. GEORGE F. JUENEMANN, relieved at the Reorganization Camp, Gettysburg, Pa., and *to Fort Logan H. Roots, Ark.*, for duty as commanding officer of that post.

Col. ALLEN M. SMITH, at Fort Logan, Colo., *to inspect property known as the Westminster College, Westminster, Colo.*, with a view to reporting upon its desirability for use as a hospital.

Lieut.-Col. FRANK C. BAKER, relieved at Fort Oglethorpe, and to report to the commanding officer, *Camp Greenleaf*, for duty as commanding officer, Evacuation Hospital No. 4.

Lieut.-Col. PAUL C. HUTTON, relieved at Philippine Dept. and *to Camp MacArthur, Waco, Texas*, for duty as division surgeon.

Major LOUIS H. HANSON, relieved at Syracuse, New York, and *to Camp Bowie, Fort Worth, Tex.*, for duty as commanding officer of the base hospital.

Major GARFIELD L. McKINNEY, relieved at Corozal, Canal Zone, and *to commanding general, Eastern Dept.*, for duty.

Major LEARTUS J. OWEN, now on duty in the office of the Surgeon-General of the Army, *to Army Medical School, Washington, D. C.*, for examination for promotion.

Lieut.-Col. JOHN W. HANNER, relieved from 76th Division, Camp Devens, Ayer, Mass., and *to Washington, D. C.*, and report in person to the Surgeon-General of the Army for duty in his office.

Col. HENRY D. SNYDER, *to New York City* for temporary duty pertaining to the assembling of the branch of the Division of Finance and Supplies for duty overseas.

To San Francisco, Calif., and to report by wire to the Adjutant-General of the Army and to the Surgeon-General of the Army for further orders, from Hawaiian Dept. Majors CLARENCE R. BELL, GEORGE R. CALLENDER, HARRY N. KERNS.

Major WILLIAM H. TEFFT, relieved at Fort Douglas, Utah, and *to Fort Riley, Kan.*, for duty as commanding officer of Evacuation Hospital No. 7.

Lieut.-Col. ROBERT E. NOBLE, *to Camp Greenleaf* for duty in connection with the Medical Dept. and upon completion of this duty will return to his proper station.

Col. WALTER D. McCAW, relieved at Headquarters, Southern Dept. Fort Sam Houston, Texas, and *to Presidio, San Francisco, Calif.*, to assume command of the expedition of medical officers for duty overseas.

Col. CHARLES LYNCH, relieved with Base Hospital No. 2, Fort Bliss, Texas, *to Fort Sam Houston, Texas*, and report to the commanding general, Southern Dept., for duty as department surgeon.

Col. HENRY A. WEBBER, relieved at Laredo, Texas, and *to Fort Bliss, Texas*, for duty as commanding officer of Base Hospital No. 2.

Lieut. EDGAR N. HUME, relieved at the United States Disciplinary Barracks, Fort Leavenworth, Kan., and *to Washington, D. C.*, and report in person to the Surgeon-General of the Army for duty in his office.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To Army Medical School, from Fort Benjamin Harrison, Lieut. JULIAN E. MEYER, Birmingham.

To Camp Dix, Wrightstown, N. J., from Fort Ethan Allen, Lieut. GEORGE C. KILPATRICK, Mobile.

To Fort Riley, base hospital, Lieut. RUSSELL CALLEN, Birmingham.

To Hoboken, N. J., as officer in charge of Mobile Laboratory, 41st Division, Lieut. JAMES R. BEAN, Birmingham.

To Rockefeller Institute, New York City, for instruction, from Fort Oglethorpe, Lieut. JOHN D. DICKSON, Birmingham.

Arkansas

To Camp McClellan, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. JAMES F. POE, Shirley.

To Fort Sam Houston, Tex., from Fort Benjamin Harrison, Lieut. GEORGE B. FLETCHER, Little Rock.

To home and inactive list, from Fort Des Moines, Lieut. DANIEL W. JONES, Little Rock.

California

To Berkeley, Calif., University of California, as recruiting officer, Lieut. BRUNO F. SANDOW, Oakland.

To Camp Kearney, Linda Vista, Calif., base hospital, Capt. HERBERT S. THOMSON, Berkeley.

To Chicago, Ill., Northwestern University Dental School, for instruction, and on completion *to Camp MacArthur,* base hospital, from Fort Oglethorpe, Capt. ERNEST DOZIER, Redding; for instruction and on completion *to proper station,* from Camp Lewis, Lieut. JOSEPH R. BROWN, San Francisco.

To Fort Leavenworth, Kan., for duty in the department laboratory, Capt. JAMES M. FISHER, Gilroy.

To Fort Sam Houston, Tex., from Fort Benjamin Harrison, Lieuts. LOUIS FELGER, PERCY K. TELFORD, Los Angeles; WILLIAM A. BOYLE, FRANK W. PINGER, San Francisco.

To Los Angeles, Calif., for instruction in military roentgenology, from Presidio of San Francisco, Lieut. WALLACE A. REED, Covina.

To San Francisco, Calif., for duty, Lieuts. WALTER E. COPPEDGE, Alturas; ALBERT F. ADAMS, Sacramento; *to Letterman Hospital,* for duty, from the Presidio of San Francisco, Lieut. HARRY E. FOSTER, Berkeley.

Colorado

To Camp Grant, Rockford, Ill., base hospital, from Fort Oglethorpe, Lieut. WILLIAM A. SEDWICK, Denver.

To Mount Clemens, Mich., for duty, from Fort Riley, Lieuts. JOHN W. THOMPSON, Pueblo; JUSTIN J. YOUNG, Kremmling.

To Rantoul, Ill., for duty, from Fort Riley, Lieut. CARL C. FUSTON, Milliken.

To Rockefeller Institute, for instruction, and on completion, *to Walter Reed General Hospital,* Takoma Park, D. C., for duty, Lieut. JOHN R. HALL, Fort Logan.

Connecticut

To Boston, Mass., General Hospital, for instruction, and on completion, *to Camp Lee,* base hospital, from Fort Benjamin Harrison, Lieut. JEREMIAH B. SULLIVAN, New Haven.

To Camp Devens, 76th Division, for duty, Capt. FRANK P. TODD, Danielson.

To Camp Greenleaf, Fort Oglethorpe, for duty with Hospital Train No. 26, Lieut. LAWRENCE H. FROST, Plainville.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. LOUIS I. MASON, Willimantic.

To New Orleans, La., Charity Hospital, for instruction, and on completion, *to Camp Beauregard,* base hospital, Lieut. FREDERICK E. STOCKTON, Springdale.

To Portland, Ore., for further instructions and assignment to duty with squadrons now being organized, Major RICHARD BLACKMORE, Framington.

To Rockefeller Institute, for instruction, Lieut. WILLIAM M. STAHL, Danbury.

To Walter Reed General Hospital, Takoma Park, D. C., for instruction in tuberculosis examination, Lieut. RAYMOND V. QUINLAN, Meriden.

District of Columbia

To Camp Sevier, Greenville, S. C., base hospital, from Fort Benjamin Harrison, Lieut. ROY T. MORRIS, Washington.

To Chicago, Ill., Northwestern University Dental School, for instruction, and on completion, *to Camp Hancock,* base hospital, from Camp Hancock, Lieut. OLIVER C. COX, Washington.

To Fort Sam Houston, Tex., for duty, from Fort Benjamin Harrison, Lieuts. JOSEPH P. MADICAN, PATRICK S. MADIGAN, ERNEST K. STRATTON, Washington.

To Pittsburgh, Pa., for instruction from Dr. William O. Sherman, and on completion, *to Fort McHenry, Md.,* Army General Hospital, No. 2, Lieut. IVA A. PELZMAN, Washington.

To Walter Reed General Hospital, Takoma Park, orthopedic service, from Camp Meade, Major THOMAS M. FOLEY, Washington.

Honorably discharged on account of being physically disqualified for active service, from Camp Jackson, Lieut. WILLIAM E. WHITSON, Washington.

Florida

To Camp Wheeler, Macon, Ga., base hospital, from Fort Oglethorpe, Lieuts. ELIJAH T. SELLERS, Jacksonville; WILLIAM R. GROOVER, Lakeland.

To Fort Barrancas, Fla., for duty, from Camp Wheeler, Lieut. ALLEN M. AMES, Pensacola.

To Fort Sam Houston, Tex., for duty, from Fort Benjamin Harrison, Lieut. BASCOM H. PALMER, Lake City.

Georgia

To Atlanta, Ga., Georgia School of Technology, as recruiting officer, Capt. WILLIAM A. JACKSON, Atlanta.

To Camp Wadsworth, Spartanburgh, S. C., base hospital, from Fort Oglethorpe, Lieut. ROBERT C. WALKER, Waycross.

To Camp Wheeler, Macon, Ga., base hospital, from St. Elizabeth's Hospital, Washington, D. C., Lieut. QUINTARD TAYLOR, Maysville.

To his home and the inactive list, from Cornell Medical College, Lieut. JOHN S. DERR, Atlanta.

To be honorably discharged on account of being physically disqualified for active service, Lieut. GRADY L. CARTER, Talbotton.

Hawaii

To Camp Kearney, Linda Vista, Calif., base hospital, from Hawaiian Dept., Capt. JOHN B. LUDY, Honolulu.

Idaho

To Camp Stuart, Newport News, Va., for duty, from Fort Benjamin Harrison, Lieut. ERNEST N. LAUBAUGH, Boise.

Illinois

To Boston, Mass., for instruction and on completion *to Camp Jackson, Columbia, S. C.,* base hospital, from Fort Benjamin Harrison, Lieuts. HILJEL T. ISACOWITZ, Chicago; ANSON L. NICKERSON, Momence; FRANK E. SHIPMAN, Paris; MARSHALL WALLIS, Normal; ORA M. WILLIAMSON, Sullivan.

To Camp Custer, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Major PHILIP S. DOANE, Chicago, Lieuts. PAUL E. BAIN, Pleasant Plains; CLIFFORD J. SPRUCE, Sibley.

To Camp Funston, Fort Riley, to inspect, and on completion *to Fort Des Moines,* and to the regular itinerary furnished, Major JOHN RIDLON, Chicago.

To Camp Gordon, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Lieut. GUY A. LONGBRAKE, Galesburg.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Capt. FRANCIS W. BARTON, Danville; Lieut. JOHN R. PORTER, Rockford.

To Camp Greene, N. C., base hospital, from Fort Benjamin Harrison, Lieut. ROSCOE A. MITCHELL, Marshall.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Capt. ROY R. FERGUSON, Chicago.

To Camp Lee, for duty, from Camp Sherman, Chillicothe, Ohio, Capt. STEPHEN V. BALDERSTON, Evanston.

To Camp Pike, base hospital, from Fort Benjamin Harrison, Capt. CHARLES J. POOLE, Mount Vernon; Lieut. RAYMOND C. GILLOGLY, Newman.

To Camp Sevier, Greenville, S. C., base hospital from Fort Benjamin Harrison, Lieut. GEORGE BLACKBURNE, Minier.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. JOSEPH R. HOLLOWBUSH, Rock Island; Lieuts. ROBERT A. NOBLE, Bloomington; CHARLES A. BURKHOLDER, Chicago; JOSEPH A. CAMPBELL, Anna; ORVEL A. SUTTLE, Mt. Vernon.

To Camp Travis, Fort Sam Houston, Texas, board for examination for tuberculosis, from Camp McClellan, Lieut. SAMUEL M. MARCUS, Chicago.

To Champaign, Ill., University of Illinois, as recruiting officer, Lieut. JAMES H. FINCH, Champaign.

To Chicago, Ill., for instruction, from Camp Dodge, Capt. EDWARD C. G. FRANING, Galesburg; Capt. ALPHA E. ROCKEY, Chicago; Lieut. LEROY B. ELLISTON, Depue; Lieut. LYMAN A. BURNSIDE, West Union.

To Cleveland, Ohio, for instruction, and on completion *to Camp Hancock,* base hospital, Lieut. JOHN H. EVANS, Chicago.

To Fort Riley, Kan., base hospital, from Fort Benjamin Harrison, Capt. PERCY J. CARROL, East St. Louis; Lieuts. ARTHUR D. JACKSON, FRANK W. MERRITT, Chicago.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieuts. JOHN E. ROBINSON, MONTREVILLE A. ST. PETER, Chicago; EDWARD S. MURPHY, Dixon.

To Hawaii, and on arrival in Honolulu to report in person to the commanding general, Hawaiian Dept., for duty, from Fort Benjamin Harrison, Lieut. ALBERT L. STEBBINGS, Marseilles.

To New Orleans, La., Charity Hospital for instruction, and on completion *to Camp Beauregard,* base hospital, Lieut. TODD P. WARD, Mt. Vernon.

To New York City, Bellevue Hospital, for instruction, and on completion to Camp Meade, base hospital, from Fort Benjamin Harrison, Lieuts. ANTHONY J. LINOWIECKI, Chicago; LOUIS SAVITSKY, Cicero; EMANUEL M. RUNDQUIST, Rockford; *to Camp Pike,* Lieut. MILTON A. WEISE, Chicago; *to Camp Taylor,* Lieut. FRANK F. FRAIDER, Chicago; *to Camp Upton,* Lieuts. JACOB A. GOODMAN, IRA McKINNEY, Chicago; *to Cornell Medical College,* from Fort Oglethorpe, Lieut. SAMUEL J. TAUB, Chicago.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to Camp Custer,* base hospital, from Fort Benjamin Harrison, Capt. EUGENE F. WAHL, Edwardsville; *to Camp Dix,* base hospital, Lieut. EVERETT P. COLEMAN, Canton.

To Pittsburgh, Pa., for instruction, and on completion *to Camp Dodge,* base hospital, from Fort Benjamin Harrison, Lieut. ARTHUR K. SPIERING, Oak Park.

To Rockefeller Institute, New York City, for instruction, Lieuts. THOMAS R. MAXWELL, New Berlin; JOHN HRABIK, Murphysboro; on completion *to Fort McPherson, Ga.,* base hospital, Lieut.

ARTHUR D. WEST, Moline; *to Fort Oglethorpe*, base hospital, from Fort Benjamin Harrison, Lieut. CHARLES R. SANDERSON, Waynesville.

To Scott Field, Bellevue, Ill., for duty, from Fort Benjamin Harrison, Lieut. HENRY L. DAVIS, Mt. Vernon.

To his home and the inactive list on account of being physically disqualified for active service, from Fort Benjamin Harrison, Lieuts. JAMES A. BOYER, Carmi; ADRIAN J. DeHAAN, East St. Louis.

Indiana

To Camp American University, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. WALTER M. STOUT, Indianapolis.

To Camp Custer, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Lieuts. JOHN C. GLACKMAN, Hartford; ELTON L. TITUS, Indianapolis.

To Camp Devens, base hospital, from Fort Benjamin Harrison, Lieut. HARRY S. OSBORNE, Glenwood.

To Camp Gordon, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Capt. SIMON J. YOUNG, Valparaiso.

To Camp Mills, Garden City, L. I., N. Y., base hospital, Lieut. WALLACE C. DYER, Evansville.

To Camp Pike, base hospital, from Fort Benjamin Harrison, Lieut. JOSEPH A. GRAHAM, Hammond.

To Camp Travis, base hospital, from Fort Benjamin Harrison, Lieut. MANFORD M. CLAPPER, La Fayette.

To Cleveland, Ohio, for instruction and on completion *to Camp Wadsworth*, base hospital, from Fort Riley, Lieut. Lyman T. Rawles, Fort Wayne.

To Fort Riley, Kan., base hospital, from Allentown, Pa., Lieut. WALTER M. STOUT, Indianapolis, Ind.

To Fort Sam Houston, Texas, from Fort Benjamin Harrison, Lieut. BENJAMIN F. PENCE, Columbia City.

To Hawaii, from Fort Benjamin Harrison, Lieut. EPHRAIM B. CHENOWETH, Nineveh.

To Hoboken, N. J., Port of Embarkation, as officer in charge of Mobile Laboratory, Third Division, Lieut. WEIR M. MILEY, Anderson.

To New Orleans, La., Charity Hospital, for instruction and on completion *to Camp Travis*, base hospital, from Fort Benjamin Harrison, Lieut. ETHAN A. ISH, Waterloo.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Sherman*, Capt. JAMES J. STANTON, Logansport; *to Camp Gordon*, Lieut. WILCOX G. THORNE, Columbus; *to Camp Sherman*, Lieut. FRANK McBEELER, Clinton, to Fort Oglethorpe, Lieut. STEPHEN B. ELRED, Henryville.

To Philadelphia, Pa., University Hospital, for instruction and on completion to Camp Custer, base hospital, from Fort Benjamin Harrison, Lieut. DAVID D. OAK, La Crosse.

Iowa

To Boston, Mass., City Hospital, for instruction and on completion *to Camp Dix*, base hospital, from Fort Benjamin Harrison, Lieut. JOHN D. HEXON, Decorah.

To Chicago, Ill., for instruction, from Fort Sam Houston, Tex., Capt. BENJAMIN R. JOHNSTON, Cedar Rapids; *to Northwestern University Dental School*, for instruction and on completion *to Camp Bowie*, base hospital, from Camp Bowie, Lieut. PRENTISS B. CLEAVES, Cherokee.

To Fort Riley, Kan., base hospital, Capt. JAMES W. OSBORN, Lieut. WILLIAM S. BINFORD, Dixon.

To New Orleans, La., Charity Hospital, for instruction and on completion *to Camp Travis*, base hospital, from Fort Benjamin Harrison, Capt. GEORGE W. YAVORSKY, Belle Plaine.

To New York City, Bellevue Hospital, for instruction and on completion *to Camp Sherman*, Lieut. RANSOM D. BERNARD, Clarion; *to Camp Upton*, Lieut. WILLIAM HARRIS, Moravia.

To Philippine Islands, from Fort Benjamin Harrison, Capt. CLIFFORD W. LOSH, Des Moines; John H. Baldridge, Batavia.

To Pittsburgh, Pa., for instruction and on completion *to Camp Grant*, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieuts. ELLIOT S. STRONG, Iowa City; HARRY B. WILKINSON, Perry.

To his home and the inactive list on account of being physically disqualified for active service, from Camp Bowie, Lieut. HARRY L. BRIDGMAN, Columbia.

Kansas

To his home and the inactive list on account of being physically disqualified for active service, from Fort Riley, Lieut. EDMOND R. KEITH, Lawrence.

Kentucky

To Boston, Mass., City Hospital, for instruction and on completion *to Camp Dix*, base hospital, from Fort Benjamin Harrison, Lieut. LOUIS R. EDLESON, Louisville.

To Camp Dix, Wrightstown, N. J., base hospital, Capt. JOHN L. PHYTHIAN, Newport.

To Camp Jackson, member of board for examination for tuberculosis, from Fort Oglethorpe, Capt. HORACE LUTEN, Fulton.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. PORTER LAYNE, Ashland.

To Camp Wadsworth, Spartanburg, S. C., base hospital, from Fort Oglethorpe, Lieut. CHARLES W. STROUP, Ludlow.

To Fort Benjamin Harrison, for instruction in tuberculosis examination, Lieut. WILLIAM S. NEEDHAM, Louisville.

To New York City, Bellevue Hospital, for instruction and on completion *to Camp Mead*, base hospital, from Fort Benjamin Harrison, Lieut. ALBERT L. SOLOMON, Hodgenville.

To his home and the inactive list from Fort Des Moines, Lieuts. MORRIS A. BLACKBURN, ROBERT L. OLIVER, Louisville.

Honorably discharged, Lieut. FINIS LONDON, Woodburn.

Louisiana

To Camp American University, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. JOHN G. LILLY, St. Joseph.

To Camp Meade, Annapolis Junction, hospital, from Fort Oglethorpe, Capt. FRANK M. LETT, Lecompte.

To Camp Sheridan, Montgomery, Ala., for duty, from Fort Oglethorpe, Major ROY M. VAN WART, New Orleans.

Maine

To Army Medical School, Washington, D. C., for instruction in orthopedic surgery, Capt. TALCOTT O. VANAMEE, Portland.

To Camp Dodge, Des Moines, Ia., base hospital, from Fort Benjamin Harrison, Lieut. HORACE K. RICHARDSON, Bradford.

To Camp Gordon, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Capt. BERTRAND D. RIDLON, Portland.

To Chicago, Ill., for instruction, and on completion *to Fort Oglethorpe* for duty, from Camp Grant, Lieut. RALPH W. WAKEFIELD, Bar Harbor.

To Hoboken, N. J., Lieut. CHARLES S. WRIGHT, Portland.

To Rockefeller Institute, for instruction, and on completion *to Fort McPherson, Ga.*, base hospital, Lieuts. HENRY K. STINSON, Augusta; CARL G. DENNETT, Unity.

Maryland

To Camp Greenleaf, Evacuation Hospital No. 4, Capt. EDWARD E. LAMKIN, Vienna.

To Camp Hancock, Augusta, Ga., base hospital, from Fort Benjamin Harrison, Lieuts. PATRICK F. McGUIRE, IRVING K. LOVETT, Baltimore.

To Camp Meade, base hospital, from Fort Benjamin Harrison, Lieut. ERWIN E. MAYER, Baltimore.

To Camp Travis, Fort Sam Houston, member of board for examination for tuberculosis, from Camp McClellan, Capt. CHARLES W. RAUSCHENBACH, Baltimore.

To Fort Oglethorpe, Ga., for duty with Hospital Train No. 22, Lieut. FRANK L. JENNINGS, Hamilton.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieut. HERTEL P. MAKEL, Baltimore.

To Rockefeller Institute, for instruction in therapy of pneumonia, Lieut. HENRY M. THOMAS, Baltimore.

To Walter Reed General Hospital, for instruction in tuberculosis examinations, Lieut. LOUIS L. JACOBS, Baltimore.

To Washington, D. C., for duty at the Army Medical Museum in connection with supplying illustrations for lecture work, from Baltimore, Major ROBERT T. TAYLOR, Baltimore.

Massachusetts

To Birmingham, Ala., to inspect a site proposed for a general hospital and on completion to his proper station, Major ELLIOT G. BRACKETT, Boston.

To Camp McClellan, base hospital, from Fort Oglethorpe, Capt. DONALD R. GILGILLAN, Worcester.

To Camp Sevier, for duty in his specialty, from Syracuse, N. Y., Lieut. HENRY R. VIETS, Boston; from Fort Benjamin Harrison, Lieut. TIMOTHY J. SULLIVAN, Watertown.

To Camp Taylor, Louisville, Ky., base hospital, from Fort Benjamin Harrison, Capt. CHARLES L. UPTON, Shelburne.

To Cleveland, Ohio, for instruction and on completion to his proper station, from Fort Ethan Allen, Lieut. HERBERT B. PERRY, Northampton.

To Fort Riley, Kan., for duty, from Fort Benjamin Harrison, Capt. ERIK S. J. JOHNSON, New Bedford.

To Gettysburg, Pa., for duty with Field Hospital and Ambulance Co. No. 29, Lieut. CHARLES H. WILSON, Chelsea.

To New York City, to attend the meeting of the Carnegie Foundation from Boston, Major HORACE D. ARNOLD, Boston; *to Bellevue Hospital* for instruction and on completion to Camp Pike, base hospital, from Fort Benjamin Harrison, Lieut. NORMAN M. SCOTT, Boston.

To Philadelphia, Pa., University Hospital, for instruction and on completion to Camp Dix, base hospital, from Fort Benjamin Harrison, Lieut. GEORGE W. TULLY, Southbridge.

To Philippine Islands, for duty, from Fort Benjamin Harrison, Lieut. HERBERT B. PRIEST, Ayer.

To Washington, D. C., to report in person to the Surgeon-General of the Army for duty in his office, from Boston, Mass., Major HORACE D. ARNOLD, Boston.

To his home and honorably discharged from Camp Devens, Lieut. JOHN J. STACK, Boston.

Michigan

To Ann Arbor, Mich., Psychopathic Hospital, for intensive training, from Fort Benjamin Harrison, Major FREDERICK H. NEWBERRY, Detroit.

To Army Medical School, for instruction in orthopedic work, Lieuts. AUGUST E. GEHRKE, WILLIAM S. GONNE, Detroit.

To Boston, for instruction and on completion *to Camp Jackson*, Columbia, S. C., base hospital, from Fort Benjamin Harrison, Lieuts. CARL A. MITCHELL, Benton Harbor; BRUNO J. SOWICKI, Detroit.

To Camp Custer, for duty, from Camp Sherman, Capt. Orton H. Clark, Kalamazoo; Lieut. CRAWFORD W. McCORMICK, Detroit.

To Camp Devens, Ayer, Mass., base hospital, from Fort Benjamin Harrison, Lieut. VICTOR H. DeSOMOSKEOY, Flint.

To Camp Dix, Wrightstown, N. J., base hospital, Lieut. LEANDER P. FERNANDEZ, Eau Claire.

To Camp Dodge, Des Moines, Iowa, base hospital, Capt. WALTER S. SHARPE, Dowagiac.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Capt. HENRY J. MEYER, Saginaw; Lieut. ELLSWORTH P. MILLS, Detroit; ELLSWORTH ORTON, Pontiac.

To Camp Jackson, Columbia, S. C., as a member of board for examination for tuberculosis, from Camp McClellan, Capt. CHARLES H. MERRILL, Detroit; for temporary duty in the base hospital, from Fort Benjamin Harrison, Lieut. ESLI T. MORDEN, Adrian.

To Camp Sherman, base hospital, from Fort Benjamin Harrison, Lieut. JEROME F. BERRY, Kalamazoo.

To Camp Taylor, Louisville, Ky., base hospital, Lieut. SAMUEL E. GEIST, Detroit; GEORGE F. LISTER, Hillman; HARLEN MACMULLEN, Manistee.

To Chicago, Northwestern University Dental School, for instruction, and on completion *to Camp Shelby,* base hospital, Lieut. DAVID D. TODD, Calumet.

To New York City, as member of examining board and recruiting officer, from Physical Examining Unit, Aviation Section, Capt. DAVID H. WEBSTER, Rudyard.

To Rockefeller Institute, for instruction and on completion *to Fort Oglethorpe,* base hospital, from Fort Benjamin Harrison, Capt. EDWIN J. EVANS, Greenland.

To the inactive list on account of being physically disqualified for active service, from Camp Sherman, Lieut. EDWARD J. AGNELLY, Detroit.

Minnesota

To Camp Lee, base hospital, from Fort Oglethorpe, Lieut. CARL C. COWIN, Adrian.

To Camp Pike, base hospital, from Fort Benjamin Harrison, Capt. ROBERT H. MONAHAN, International Falls.

To Camp Sherman, base hospital, from Fort Benjamin Harrison, Lieut. CARNETT BELOTE, Caledonia.

To Cleveland, for instruction and on completion *to Camp Greene,* base hospital, Lieut. RALPH B. BETTMAN, Rochester.

To Fort Sam Houston, Texas, for duty from Fort Benjamin Harrison, Lieut. CLEON J. GENTZKOW, Minneiska.

To New York City, Bellevue Hospital, for instruction and on completion *to Camp Taylor,* base hospital, from Fort Benjamin Harrison, Lieut. CARL N. HARRIS, St. Paul; to proceed to Camp Upton, Lieut. GORDON G. SR. CLAIR, Section Thirty.

To Pittsburgh, for intruction and on completion *to Camp Grant,* Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. IRAN B. MAERCKLEIN, Renville.

To Rantoul, Ill., for duty, from Fort Riley, Capt. CHESTER H. CLARK, Duluth.

To the inactive list on account of being physically disqualified for active service, from Camp Grant, Lieut. WARD AKESTER, Marshall.

Mississippi

To Camp Meade, Annapolis Junction, base hospital, from Fort Oglethorpe, Lieuts. CHARLES G. BELL, Canton; LEONIDAS F. BARRIER, Greenwood.

To his home and the inactive list, from Fort Des Moines, Lieuts. BENJAMIN T. WILLIAMSON, Greenwood; THOMAS E. PHILLIPS, Whynot.

Missouri

To Boston, City Hospital, for instruction and on completion *to Camp Dix,* base hospital, from Fort Benjamin Harrison, Capt. ELBERT J. LEE, JR., St. Louis.

To Camp Dodge, Des Moines, Iowa, base hospital, from Fort Benjamin Harrison, Lieut. LEWIS E. J. BROWNE, Lewistown.

To Chicago, Northwestern University Dental School, for instruction and on completion *to Camp Hancock,* base hospital, Lieut. CLAUDE E. FRAZIER, Kansas City; *to Camp Logan,* base hospital, Lieut. FRANK M. BARNS, Brashear.

To Fort Riley, Kansas, for instruction, from Jefferson Barracks, Capt. ABRAHAM C. LEGGAT, St. Louis.

To New York City, Cornell Medical College, for instruction in military roentgenology, from Camp Funston, Lieut. ZACHARIAN G. JONES, Kansas City.

To Philadelphia, to give instruction in the school of plastic and oral surgery, and on completion of this duty to return to his proper station, Major VILRAY P. BLAIR, St. Louis.

Montana

To New Orleans, Charity Hospital, for instruction and on completion *to Camp Travis,* base hospital, from Fort Benjamin Harrison, Lieut. GROVER C. SHERRARD, Opheim.

Nebraska

To Fort Riley, Kan., for duty with Evacuation Hospital No. 1, from School of Military Roentgenology, Lieut. IRA H. LOCKWOOD, Lincoln.

To Pittsburgh, for instruction and on completion *to Camp Dodge,* base hospital, from Fort Bejamin Harrison, Lieut. CREIGHTON D. WILLIAMS, Genoa.

To Rockefeller Institute, for instruction in laboratory work, Capts. WILLIAM W. DEWOLFE, Bennet; HARRY M. BONNIWELL, Lincoln.

Nevada

To Camp Dodge, Des Moines, Iowa, for duty, from Fort Leavenworth, Lieut. DELOS A. TURNER, Goldfield.

To Camp Shelby, Hattiesburg, Miss., base hospital, from Fort Riley, Lieut. WILLIAM J. CIRCE, Carson City.

To Fort Oglethorpe, for duty, Lieut. ROLAND D. RUSSELL, Owyhee.

New Hampshire

To Camp Gordon, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Lieut. OSWALD S. MAYNARD, Nashua.

New Jersey

To Army Medical School, Washington, D. C., for instruction in orthopedic surgery, from Boston, Lieut. FRANK W. PINNEO, Newark.

To Camp Devens, as member of a board for examination for tuberculosis, from Walter Reed General Hospital, Lieut. SAMUEL R. FAIRCHILD, Carney Point.

To Camp Dix, Wrightstown, N. J., base hospital, from Fort Oglethorpe, Lieuts. ALFRED L. ELLIS, Metuchen; GLENDON R. LEWIS, Newark.

To Columbus Barracks, Ohio, for duty in his specialty, from Gettysburg, Pa., Lieut. AMBROSE F. DOWD, Newark.

To Fort Porter, N. Y., for duty with Hospital Unit A, from Cornell Medical College, Lieut. PETER G. FAGONE, Hackensack.

To Princeton, N. J., Princeton University, as recruiting officer, Lieut. ANTHONY C. ZEHNDER, Newark.

To Yaphank, L. I., N. Y., for duty, Capt. WILLIAM J. CONDON, New Brunswick.

New York

To Army Medical School, Washington, D. C., for duty, from Fort Benjamin Harrison, Lieut. SAUL L. MEYLACKSON, New York City; for instruction in orthopedic surgery, from Camp Bartlett, Westfield, Mass., Lieut. FRANCIS J. A. BENNETT, Auburn; from Camp Taylor, Lieut. HUBERT E. CHAUVIN, Brentwood; Lieut. ALFRED M. RIDWELL, New York.

To Atlanta, Ga., for duty in the department laboratory, from Army Medical School, Lieut. MANNING C. FIELD, Brooklyn.

To attend conference of the State Hospital Development Commission, New York City, Major THOMAS W. SALMON, Staten Island.

To Austin, Tex., school of aeronautics, for duty, from Fort Riley, Lieut. FRANK A. JOHNSTON, Kingston.

To Boston, for instruction and on completion *to Camp Jackson,* Columbia, S. C., base hospital, from Fort Benjamin Harrison, Lieut. ALEXANDER S. SIM, Brooklyn.

To Boston, Massachusetts General Hospital, for instruction and on completion *to Camp Lee,* base hospital, from Fort Benjamin Harrison, Lieut. SAMUEL ZWERLING, Brooklyn.

To Camp Custer, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Capt. ALFRED W. ARMSTRONG, Canandalgua; Capt. EUGENE F. CONNALLY, Troy.

To Camp Devens, Ayer, Mass., as member of board for examination for tuberculosis, from Walter Reed General Hospital, Capt. THEODORE J. ABBOTT, New York; Lieut. EDWARD P. EGLES, New York; Lieut. CLYDE D. OATMAN, Poolville; for duty in the base hospital, from Syracuse, Lieut. RAYMOND C. HILL, Bath; for duty in the base hospital, from Fort Benjamin Harrison, Lieut. LEON H. CORNWALL, New York.

To Camp Dix, Wrightstown, N. J., base hospital, from Fort Oglethorpe, Lieut. HAROLD F. MICKLEY, Seneca Falls.

To Camp Doniphan, Fort Sill, Okla., base hospital, from Fort Benjamin Harrison, Lieut. GEORGE W. BATT, Kennedy; from Neurological Institute, New York City, Lieut. VINCENT W. WEISS, New York.

To Camp Gordon, as member of board for examination for tuberculosis, from Fort Oglethorpe, Lieut. FRANCIS A. GLASS, Yonkers.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Capt. JOHN M. KEYES, New York.

To Camp Greenleaf, Fort Oglethorpe, base hospital, Lieut. HERBERT ADLER, New York.

To Camp Hancock, Augusta, Ga., base hospital, from Fort Benjamin Harrison, Lieut. MAX A. LEVY, New York.

To Camp Jackson, Columbia, S. C., Lieut. HARRY V. JUDGE, Albany; Lieut. GEORGE A. BLAKESLEE, New York; Lieut. PAUL B. JOHNSON, New York; Lieut. LEWIS H. TAFT, New York.

To Camp Lee, Petersburg, Va., Capt. GEORGE D. HAMLIN, Brooklyn.

To Camp McClellan, base hospital, Lieut. HARRY D. BREWSTER, New York.

To Camp Meade, Annapolis Junction, base hospital, from Fort Oglethorpe, Lieut. HARBERT W. EMSHEIMER, New York.

To Camp Mills, Garden City, L. I., N. Y., base hospital, from Camp Custer, Capt. CONSTANTINE J. MACGUIRE, New York.

To Camp Pike, Little Rock, Ark., base hospital, Capt. GEORGE E. MAURER, New York; board for examination of command for tuberculosis, from Camp McClellan, Lieut. FRANK J. HERBIG, Staten Island.

To Camp Sevier, Greenville, S. C., base hospital, from Fort Benjamin Harrison, Lieut. MAURICE A. STRUM, New York.

To Camp Shelby, base hospital, from Fort Riley, Kan., Lieut. JOHN W. BURTON, Alpine.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. HENRY L. SCHELLING, Brooklyn.

To Camp Taylor, Louisville, Ky., base hospital, from Fort Benjamin Harrison, Capt. CARLIN PHILIPS, New York; Lieut. WILLIAM H. NAFIS, Brooklyn; Lieut. WILLIAM A. CONLON, Central Islip; Lieut. EMIL J. PELLINI, New York.

To Camp Travis, Fort Sam Houston, board for examination of command for tuberculosis, from Camp McClellan, Lieut. PATRICK J. HIRST, Middle Grove.

To Camp Upton, Yaphank, L. I., N. Y., board for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. DANIEL R. ROBERT, Brooklyn; base hospital, from Fort Oglethorpe, Lieut. JONATHAN PEARSON, Schenectady.

To Chicago, Northwestern University Dental School, for instruction, and on completion *to Camp Wheeler,* base hospital, Capt. FRANCIS R. LYMAN, Hastings-on-Hudson; Lieut. GEORGE S. SKIFF, Gainesville; Lieut. FREDERICK W. LESTER, Seneca Falls.

To Fort Oglethorpe, for duty with Hospital Train No. 27, Lieut. KARL V. PACE, Mineola; for duty with Hospital Train No. 33, Lieut. DANIEL BACHARACH, New York; for instruction, Lieut. PHILIP R. ZINN, New York; for duty in his specialty at the base hospital, from Camp McClellan, Lieut. FREDERICK C. DEVENDORF, Utica.

To Fort Riley, Kan., base hospital, from Fort Benjamin Harrison, Major BRUCE G. PHILLIPS, New York; for duty in connection with the outbreak of meningitis, and on completion *to Fort Oglethorpe* for duty as instructor, from Fort Benjamin Harrison, Capt. HERBERT L. CELLER, New York.

To Fort Sam Houston, Texas, for duty from Fort Benjamin Harrison, Lieut. RALPH E. CURTI, Brooklyn; Lieut. ROLAND A. DAVISON, Brooklyn; Lieut. JOHN R. EVERS, Elmsford; Lieut. FRANCIS M. FITTS, New York; Lieut. WILLIAM A. SMITH, New York; Lieut. EDWARD H. TONOLLA, New York; Lieut. HAROLD H. GOLDING, Peekskill; Lieut. SEYMOUR C. SCHWARTZ, Syracuse; Lieut. FRANCIS T. DUFFY, Troy.

To Fort Slocum, N. Y., for duty, from Cornell Medical College, Lieut. CHARLES S. GOODWIN, Brooklyn.

To Garden City, L. I., N. Y., for duty, from Fort Sill, Major ATTILIO M. CACCINI, New York.

To Ithaca, N. Y., Cornell University, as recruiting officer, Capt. SAMUEL A. MUNFORD, Ithaca.

To Louisville, Ky., base hospital, from Fort Benjamin Harrison, Lieut. LIPMAN M. KAHN, New York.

To Mineola, L. I., N. Y., for duty, from Fort Benjamin Harrison, Capt. GUY H. TURRELL, Smithtown Branch.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to Fort Riley,* base hospital, Lieut. EDWARD P. FLOOD, Albany.

To New York City, in charge of the physical examining unit, Capt. WILLIAM A. SCRUTON, New York.

To New York City, Roosevelt Hospital, for instruction, and on completion of this duty to *Fort Oglethorpe,* Evacuation Hospital No. 7, from Syracuse, N. Y., Capt. ARCHER D. BABCOCK, Randolph; on completion *to U. S. Army General Hospital,* Capt. JAMES W. DECKER, New York.

To New York City, U. S. Army General Hospital No. 1, for duty, from Academy of Medicine, Capt. JOHN J. COTTER, New York; to Bellevue Hospital for instruction and on completion *to Camp Gordon,* base hospital, from Fort Benjamin Harrison, Lieut. GROVER A. SILLIMAN, Delhi; on completion of course *to Camp Pike,* base hospital, from Fort Benjamin Harrison, Lieut. IRVING S. SCHNEIKRAUT, Brooklyn; on completion of duty *to Camp Taylor,* base hospital, from Fort Benjamin Harrison, Lieut. MYER S. BLOOM, Binghampton; on completion of duty *to Camp Upton,* base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM H. SEWARD, Amsterdam; to Roosevelt Hospital, for instruction and on completion *to Camp Upton,* base hospital, Lieut. EDWIN C. FOSTER, Penn Yan.

To New York City, for instruction in orthopedic work, from Camp Bartlett, Westfield, Mass., Lieut. WALTER H. McSHANE, Troy.

To Philadelphia, University Hospital, for instruction, and on completion *to Camp Dix,* base hospital, from Fort Benjamin Harrison, Lieut. MICHAEL E. NOLAN, Johnstown.

To Pittsburgh, for instruction, and on completion *to Camp Grant, Rockford, Ill.,* base hospital, from Fort Benjamin Harrison, Lieut. SOLOMON SCHLIMBAUM, New York.

To Rockefeller Institute, for instruction, on completion *to Roosevelt Hospital* for a further course of instruction, and on completion to *Wrightstown, N. J.,* Camp Dix, Capt. WAYLAND A. MORRISON, New York; for instruction in laboratory work, from Washington, D. C., Lieut. BYRON D. WHITE, Brooklyn; for instruction and on completion of this course *to U. S. Army General Hospital No. 1, N. Y.,* for temporary duty, from Fort Benjamin Harrison, Lieut. LOUIS F. BOYD, New York; for instruction and on completion *to Walter Reed General Hospital, Takoma Park, D. C.,* for duty, Lieut. FRANCIS X. McGOVERN, New York.

To Scott Field, Belleville, Ill., for duty, from Fort Benjamin Harrison, Lieut. MORRIS WINECK, Troy.

To Walter Reed General Hospital, for instruction in tuberculosis examination, Lieut. FRANCIS ARGUS, Buffalo.

To his home and honorably discharged, from Cornell Medical College, Lieut. BENJAMIN J. BOYD, New York.

To the inactive list, from Camp Wheeler, Macon, Ga., Lieut. CARLTON A. LEE, Brooklyn.

Honorably discharged on account of being physically disqualified for active service, Capt. EDWARD J. WIENCKE, Schenectady.

North Carolina

To Camp Lee, Petersburg, Va., as member of board for examination of command for tuberculosis, from Fort Oglethorpe, Capt. SYLVESTER D. CRAIG, Winston Salem.

To Camp McClellan, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. JOHN M. PRESSLY, Belmont.

To Chicago, Northwestern University Dental School, for instruction, and on completion *to Camp Greene,* base hospital, Lieut. CHARLES W. BANNER, Greensboro.

To Fort Oglethorpe, for instruction, Lieut. RALPH S. STEVENS, Smithfield.

Honorably discharged on account of being physically disqualified for active service, from Fort Des Moines, Lieuts. JAMES S. THOMPSON, Dunn; FOSTER F. BURNETT, Wilmington.

North Dakota

To Camp Meade, Annapolis Junction, for duty, from Camp American University, Lieut. EDWARD F. KENNEDY, White Earth.

To Fort Benjamin Harrison, for instruction in tuberculosis examination, Lieut. HERBERT B. WENTZ, Verona.

To Fort Riley, base hospital, Lieut. BERNARD S. NICKERSON, Mandan.

Ohio

To Allentown, Pa., for duty with Base Hospital No. 31, from Rockefeller Institute, Lieut. DAVID L. FARLEY, Youngstown.

To Army Medical School, for instruction, Lieut. CHARLES A. STAMMEL, Jr., Cincinnati.

To Camp Dix, Wrightstown, N. J., base hospital, Capt. WILLIAM A. QUINN, Portsmouth.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. IVAN I. YODER, Cleveland.

To Camp Greene, N. C., base hospital, from Fort Benjamin Harrison, Lieuts. WALTER H. MYTINGER, Chillicothe; NICHOLAS L. ZINNER, Cleveland.

To Camp Jackson, Columbia, S. C., as member of board for examination of command for tuberculosis, from Camp McClellan, Lieut. WILLIAM S. P. DONEHOO, Wintersville.

To Camp Taylor, Louisville, Ky., base hospital, Capt. ELMER A. KLEIN, Norwood.

To Columbus, Ohio, Ohio State University, as recruiting officer, Lieut. AUSTIN H. SEEDS, Columbus, Ohio.

To Fort Benjamin Harrison, base hospital, from Fort Benjamin Harrison, Major HENRY L. WOODWARD, Cincinnati; for instruction in tuberculosis examination, Lieut. CHARLES B. HAMMA, Springfield.

To Fort Oglethorpe, for instruction, Lieut. JOHN A. MEEK, Lorain.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieut. HAROLD O. BROWN, Cincinnati.

To New Orleans, Charity Hospital, for instruction, and on completion *to Fort Riley,* base hospital, Lieut. JOHN M. STEEL, Cleveland; to proceed to Camp Beauregard, Lieut. JOHN M. STEEL, Lakewood.

To Philadelphia, for duty with Base Hospital No. 38, Second Regiment Armory, from New York Post-Graduate Hospital, Lieut. ROBERT B. PRATT, Bellefontaine.

To San Diego, Calif., Rockwell Field, for duty, from Fort Riley, Lieut. JULIUS C. KRAMER, Elyria.

To the inactive list, from Fort Des Moines, Lieut. LOUIS A. CORNISH, Cincinnati.

Oklahoma

To Chicago, Northwestern University Dental School, for instruction, and on completion *to Camp Dodge,* Des Moines, Iowa, from Fort Riley, Capt. GEORGE D. McLEAN, Oklahoma; for instruction, from Camp Doniphan, Fort Sill, Okla., Lieut. RAYMOND H. FOX, Altus; from Fort Sam Houston, Lieut. WILLIAM G. HUSBUND, Gould.

To Fort Omaha, Neb., for duty, from post hospital, Fort Omaha, Lieut. BURTON FAIN, Frederick.

To Fort Sam Houston, Texas, for duty from Fort Benjamin Harrison, Lieut. JOHN W. WHISENANT, Duncan.

To Rockefeller Institute, for instruction in laboratory work, Lieut. THOMAS A. HARTGRAVES, Soper.

Oregon

To Camp Lewis, American Lake, Wash., for duty, Lieut. DWIGHT F. MILLER, Portland, Ore.

To Chicago, for instruction, and on completion *to return to his proper station,* from Fort Columbus, Wash., Lieut. LLOYD H. MOTT, Salem.

Pennsylvania

To Army Medical School, Washington, D. C., for instruction in orthopedic surgery, Lieut. GUY C. BOUGHTON, Erie; for instruction, from Camp Hancock, Lieut. ZERA E. BOLIN, Philadelphia.

To Atlanta, Ga., for duty in the department laboratory, Lieut. RUBEN A. E. PETERSON, Allentown.

To Boston, City Hospital, for instruction, and on completion *to Camp Dix,* base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM J. REDDY, Shenandoah.

To Camp Bowie, Fort Worth, Texas, base hospital, Capt. JAMES G. FLYNN, Ridgway.

To Camp Custer, Battle Creek, as sanitary inspector, Major JAMES F. EDWARDS, Pittsburgh; at base hospital, from Fort Oglethorpe, Lieut. FRANK B. STEVENSON, Indiana.

To Camp Dix, Wrightstown, N. J., base hospital, from Fort Oglethorpe, Lieut. CHARLES C. GANS, Chambersburg.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. FRANCIS J. KELLY, Philadelphia; Lieut. REES S. LLOYD, Pittsburgh.

To Camp Greenleaf, Fort Oglethorpe, for duty with Hospital Train No. 26, Lieut. FRANK F. BARTHMAIER, Philadelphia; for instruction, Lieut. HERBERT COOPER, Philadelphia; to Evacuation Hospital No. 5, for duty, Lieut. EDWARD A. PITCAIRN, Wilkinsburg.

To Camp Hancock, Augusta, Ga., to direct the nutritional survey of this camp and on completion of this duty to return to his proper station, Capt. CASPAR W. MILLER, Wallingford.

To Camp Jackson, as member of board for examination of command for tuberculosis, from Fort Oglethorpe, Lieut. THOMAS L. COLEY, Philadelphia; in base hospital, from Fort Benjamin Harrison, Lieut. EVAN W. MEREDITH, Pittsburgh.

To Camp Kelly, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. WILLIAM C. T. POULSON, Philadelphia.

To Camp Lee, Petersburgh, Va., as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Capt. ELMER G. WEIBEL, Erie; Lieut. JOHN DONNELLY, Philadelphia; in base hospital, from Fort Oglethorpe, Lieut. OSCAR J. KINGSBURY.

Nesquehoning; Lieut. JOSEPH J. KOCYAN, Plains; Lieut. HOWARD C. DOWN, Wycox.

To Camp McClellan, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. JOHN W. MERRYMAN, Kennett Square.

To Camp Meade, Annapolis Junction, Md., base hospital, from Fort Oglethorpe, Major FRED H. CLARK, Wilkes-Barre; as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. ABRAHAM TRASOFF, Philadelphia.

To Camp Pike, Little Rock, Ark., as member of board for examination of command for tuberculosis, from Camp McClellan, Lieut. HARRY O. MATEER, Pittsburgh.

To Camp Taylor, Louisville, Ky., base hospital, from Fort Benjamin Harrison, Lieut. FRANCIS E. EVANS, Philadelphia.

To Camp Travis, Fort Sam Houston, Texas, base hospital, from Fort Oglethorpe, Lieut. WILLIAM R. BREADY, Philadelphia; Lieut. REUBEN A. BOGIA, Philadelphia.

To Camp Upton, Yaphank, L. I., N. Y., base hospital, from Fort Oglethorpe, Lieut. CHARLES E. MULLIN, Cambridge Springs; as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. RALPH E. HENRY, Erie.

To Camp Wadsworth, Spartanburg, S. C., base hospital, from Fort Oglethorpe, Lieut. CLARK H. YEAGER, Wilkes-Barre.

To Chanute Field, for duty, from Fort Riley, Lieut. THOMAS E. JONES, Philadelphia.

To Chicago, Northwestern University Dental School, for instruction, and on completion *to Camp Sheridan,* base hospital, from Fort Oglethorpe, Lieut. SAMUEL McCLARY, III, Philadelphia.

To Fort McHenry, Md., for duty in the U. S. Army General Hospital, No. 2, from Johns Hopkins Hospital, Baltimore, Lieut. STEWART C. BOWERS, New Freedom.

To Fort Monroe, Va., for duty, from Camp Wheeler, Lieut. CHARLES C. CROUSHORE, Greensburg.

To Fort Oglethorpe, for instruction, from Fort McPherson, Lieut. VICTOR J. P. JOURDAN, Bristol; for duty with Hospital Train No. 28, Lieut. CLARENCE H. KETTERER, Butler.

To Fort Porter, N. Y., for duty with Hospital Unit "A," Lieut. PERCY D. MOULTON, Germantown, Philadelphia; Lieut. CHARLES A. FIFE, Philadelphia; Lieut. DOUGLAS P. MURPHY, Philadelphia.

To Fort Sam Houston, Texas, for duty from Fort Benjamin Harrison, Lieut. RICHARD S. MAGEE, Altoona; Lieut. CHARLES R. SNYDER, Marysville; Lieut. DANIEL C. HANKEY, Pittsburgh; Lieut. WILLIAM W. McCAW, Pittsburgh; Lieut. MYRON P. RUDOLPH, Pittsburgh; Lieut. MAURICE S. WEAVER, Pittsburgh.

To Hoboken, N. J., Port of Embarkation, as officer in charge of Mobile Laboratory, Thirty-First Division, Lieut. HARRY E. UNGERLEIDER, Philadelphia.

To Louisville, Ky., for conference with the Kentucky Committee on Medical Defense, and on completion *to Indianapolis and Memphis, Tenn.,* to confer with State Committees on Medical Defense and itinerant boards, and on completion *to his proper station,* Major HENRY D. JUMP, Philadelphia.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Gordon,* base hospital, from Fort Benjamin Harrison, Lieut. LAWRENCE C. MOORE, Chatham.

To Philadelphia, University Hospital, for instruction, and on completion *to Camp Gordon,* base hospital, from Fort Benjamin Harrison, Lieut. JOHN L. LAVIN, Kingston; on completion *to Camp Dix,* base hospital, from Fort Benjamin Harrison, Lieut. HARRY P. SMITH, Pittsburgh.

To Rockefeller Institute, for instruction, and on completion *to Fort Oglethorpe,* base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM H. NIX, Indiana; for instruction in laboratory work, Lieut. OTTO C. HIRSCH, Philadelphia.

To the inactive list, from Camp Custer, Lieut. ROBERT C. JOHNSTON, Springdale.

Honorably discharged on account of being physically disqualified for active service, Lieut. SAMUEL H. KOHLMAN, Philadelphia.

Philippine Islands

To Philippine Department, Manila, P. I., for duty, Lieut. PAUL McC. LOWELL, Manila.

Rhode Island

To Army Medical School, for instruction, Lieut. CLYDE B. COVEY, Howard.

South Carolina

To Camp Greenleaf, Fort Oglethorpe, for instruction, from Army Medical School, Lieut. KARL L. ABLE, Leesville.

To Fort Oglethorpe, for instruction, Lieut. VICTOR M. ROBERTS, Blackburg.

To Fort Riley, Kan., for duty, from Fort Benjamin Harrison, Lieut. LEWIS F. ROBINSON, Pickens; from Jefferson Barracks, Lieut. WILLIAM G. WHITE, York.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieut. ALBERT B. PAVY, Charleston.

To New Orleans, Charity Hospital, for instruction, and on completion *to Camp Beauregard,* base hospital, Lieut. BENJAMIN F. WYMAN, Aiken.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Gordon,* base hospital, from Fort Benjamin Harrison, Lieut. PRESTON J. JOHNSTON, Estell.

South Dakota

To Fort Riley, for duty, Lieut. WILLIAM E. CLARK, Aberdeen.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieut. EARLE D. QUINNELL, Sisseton.

To Rockefeller Institute, for instruction in laboratory work, Lieut. GUSTAVE A. LANDMANN, Scotland.

Tennessee

To Boston, for instruction, and on completion *to Camp Jackson,* Columbia, S. C., base hospital, from Fort Benjamin Harrison, Lieut. LISLE B. ROBINSON, Memphis.

To Camp Jackson, Columbia, S. C., base hospital, from Fort Oglethorpe, Lieut. NICHOLAS ARDAN, Bristol.

To Camp Kearney, Linda Vista, Calif., base hospital, from Fort Oglethorpe, Lieut. HUGH T. MOORE, Chattanooga.

To Chicago, Northwestern University Dental School, for instruction, and on completion *to Camp Beauregard,* base hospital, Capt. WILLIAM A. CARNES, Memphis.

To Fort Oglethorpe, for instruction, Lieut. JOHN H. HERRING, Memphis.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieuts. JAMES W. McCLAREN, Jackson; HENRY L. FRASER, Nashville.

To Memphis, Dyersburg, Union City, Jackson, Brownsville, Paris, Clarksville, Franklin, Columbia, Fayettesville, Murfreesboro, Chattanooga, Cleveland, Morristown, Bristol, Johnson City, Knoxville, Nashville, for the purpose of examining applicants for the Medical Reserve Corps, Lieuts. HARRISON H. SHOULDERS, Nashville; SIDNEY S. EVANS, Ripley.

To Nashville, Tenn., for duty, Lieuts. HARRISON H. SHOULDERS, Nashville; SIDNEY S. EVANS, Ripley.

To San Antonio, Texas, Camp Kelly, for duty, from Fort Oglethorpe, Lieut. FLEMING J. O'CONNOR, Jackson.

To Tenafly, N. J., Base Hospital No. 66, Venereal Hospital, Lieut. HARLEY L. ACUFF, Knoxville.

To his home and the inactive list, from Fort Des Moines, Lieuts. GEORGE W. BUGG, Nashville; THOMAS W. RHODES, Whiteville.

Honorably discharged, from Camp Wheeler, Lieut. ROBERT B. GRIFFIN, Ridgely.

Texas

To Austin, Texas, University of Texas, as recruiting officer, Lieut. ROBERT A. TRUMBULL, Dallas.

To Boston, and on completion *to Fort Sam Houston,* base hospital, Major CHARLES S. VENABLE, San Antonio.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. GEORGE L. LANGWORTHY, Lakeview.

To Camp Travis, as member of board for examination of command for tuberculosis, from Fort Bliss, Capt. CHARLES McC. HENDRICKS, El Paso.

To Chicago, for instruction, from Camp Cody, Capt. THOMAS C. BROOKS, Bay City, Texas.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieuts. DOUGLAS H. MEBANE, ROBERT K. SIMPSON, PAUL H. STREIT, Galveston; WILLIAM D. PETIT, Marfa, FRANK H. MOOSE, Weatherford.

To Fort Worth Texas, for duty, from Fort Sill, Lieut. EUGENE W. R. WILLIAMS, Celeste.

To report by wire to the commanding general, Southern Department, for assignment to duty, Lieut. BROOKS G. GRANT, Fort Worth.

To his home and the inactive list, from Camp Cody, Lieut. PAUL GALLAGHER, El Paso.

To his home and the inactive list on account of being physically disqualified for active service, from Camp Sherman, Lieut. JULIUS H. HILL, Heath.

Virginia

To Army Medical School, Washington, D. C., for instruction, Lieut. BERNARD L. JARMAN, Charlottsville.

To Camp Lee, Petersburg, Va., for duty, from Camp Wheeler, Lieut. WILLIAM S. WILEY, Bristol.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieut. CHARLES W. SALE, Fredericksburg.

To New York City, Roosevelt Hospital, for instruction, and on completion *to Camp Lee,* base hospital, Capt. EDWARD M. PARKER, Emporia; *to Bellevue Hospital,* for instruction, and on completion *to Camp Gordon,* base hospital, from Fort Benjamin Harrison, Lieut. CHARLES PHILLIPS, Richmond.

To Philadelphia, for instruction in orthopedic surgery, and on completion to return to inactive list, Lieut. KYLE B. STEELE, Charlottesville.

Vermont

To Army Medical School, Washington, D. C., for instruction in orthopedic surgery, from Fort Ethan Allen, Lieut. JOHN D. THOMAS, Burlington.

To Baltimore, Phipps Clinic, for intensive training in his specialty, from Gettysburg, Pa., Lieut. STEWART L. GOODRICH, Waterbury.

To Boston, for instruction in orthopedic surgery, from Fort Ethan Allen, Capt. HARRY L. FROST, Williston.

To Fort Riley, Kan., base hospital, from Fort Benjamin Harrison, Capt. HENRY C. JACKSON, Woodstock.

To Rockefeller Institute, for instruction in laboratory work, from Fort Ethan Allen, Capt. FREDERICK E. CLARK, Burlington; *to Fort Oglethorpe,* base hospital, from Fort Benjamin Harrison, Lieut. GEORGE ROBERTS, Chester.

Washington

To Camp Hancock, Camp Sevier, Camp Wadsworth and Camp Greene, to make a nutritional survey of the camps, and on completion to return to his proper station, from Camp American University, Lieut. ROLLA B. HILL, Colfax.

To Chicago, for instruction, Major DEAN LEWIS; from Vancouver Barracks, Lieut. WALLACE A. PRATT, Walla Walla.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieut. LEO S. TRASK, Burlington.

West Virginia

To Camp Custer, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM L. RAYL, Huntington.

To Camp Devens, as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Capt. GEORGE H. BARKSDALE, Charleston.

To Chicago, Northwestern University Dental School, for instruction, and on completion *to Rockford, Ill.,* base hospital, from Fort Benjamin Harrison, Capt. MAURICE C. JAMES, Hinton.

To Fort Oglethorpe, for instruction, Lieut. WILLIAM O. HEARN, Bluefield; Lieut. HERBERT C. KINCAID, Summersville.

To New York City, Cornell Medical College, for instruction in military roentgenology, from Fort Benjamin Harrison, Lieut. HOMER W. GRIMM, St. Marys.

To Tenafly, N. J., for duty at Base Hospital No. 86, venereal hospital, from Fort Benjamin Harrison, Lieut. RUSH F. FARLEY, Ivaton.

Wisconsin

To Camp Cody, base hospital, from Fort Benjamin Harrison, Lieut. ELMER S. JOHNSON, Oregon.

To Fort Leavenworth, Kan., for duty in the department laboratory, Capt. MILTON W. HALL, Mendovi.

To Fort Sam Houston, Texas, for duty from Fort Benjamin Harrison, Lieut. BENJAMIN B. ROWLEY, Milwaukee.

To Rantoul, Ill., for duty, from Fort Riley, Lieut. PAUL H. FOWLER, Plain.

To Rockefeller Institute, New York City, for instruction in laboratory work, from Houston, Texas, Lieut. EDWARD P. COOKE, Milwaukee.

Wyoming

To Rockefeller Institute, for instruction in laboratory work, Lieut. GEORGE W. EARLE, Lusk.

Association News

MEDICAL ADVISORS TO THE GOVERNORS OF STATES

Physicians Selected for the Purpose of Establishing and Conducting the Work of the Medical Advisory Boards in Connection with the Selective Service Regulations

Under date of October 19, the following report of the Board of Trustees was submitted to the members of the House of Delegates of the American Medical Association, and was adopted unanimously by a postal vote:

To the Members of the House of Delegates of the American Medical Association:

Under date of Oct. 13, 1917, Hugh S. Johnson, Lieutenant-Colonel, Judge Advocate, Executive Officer of the Provost Marshall General, acting for the President of the United States and War Department, addressed a letter to the American Medical Association from which we quote:

"We need the active and vigorous cooperation of the American Medical Association. We need the promptest and most thorough action in this regard. Will you not call together a sufficient number of your executive council to authorize this cooperation by the Association, and to consider a definite and concrete proposition which can be presented here, and upon which we can act?"

Specifically, the cooperation desired of the Association is set forth in the following:

"It is planned to establish Medical Advisory Boards, not necessarily integrated with the territorial jurisdiction of either Local or District Boards, but having headquarters with sufficient apparatus and conveniences so located as to be accessible to boards in the portion of the state in which the Advisory Boards are situated. Any case in which the local examining physician has held the registrant disqualified for service (unless the disqualification is obvious) or in which the local physician is in doubt, or in which the registrant feels aggrieved by the decision of the local physician, or where the Local Board or the Government Appeals Agent desires to appeal the findings of the local physician, is to be sent to such Medical Advisory Board for an exhaustive [medical] reexamination upon which the Local Board can proceed to a final determination."

These Medical Advisory Boards will consist of physicians selected for their ability to make thorough and complete physical and mental examinations. This means that the boards shall be composed of specialists competent to make such laboratory and other examinations as may be required. This matter was of such importance and the urgency was so great that, in accordance with the spirit of the recommendation of the Reference Committee on Reports of Officers adopted by the House of Delegates in June, 1917, i. e.:

"We further suggest to the House of Delegates that it formally and officially offer to the government, through adoption of this recommendation, the services and facilities of the American Medical Association for such assistance as may be in its power to render hereafter."

the Board of Trustees, on Oct. 19, 1917, in special session assembled for the purpose of considering the matter, all the members being present, unanimously adopted the following resolutions:

Resolved, That the Board of Trustees for and on behalf of the American Medical Association accept the invitation to cooperate with the Provost Marshall General in the matter presented in the letter of Lieut.-Col. Hugh S. Johnson under date of Oct. 13, 1917.

Resolved, That a committee of three be and hereby is appointed with full power to act in conjunction with the Provost Marshall-General in the premises.

The following committee was appointed: M. L. Harris, secretary, Board of Trustees; Hubert Work, chairman, House of Delegates, and E. J. McKnight, member of the Board of Trustees.

Respectfully submitted, by order of the Board of Trustees,

M. L. HARRIS, Secretary, Board of Trustees.

The committee at once proceeded to Washington, D. C. After consultation with Lieut.-Col. Johnson of the Provost Marshal-General's Office, a conference with representatives of the Committee on State Activities of the General Medical Board of the Advisory Commission, Council of National Defense, was arranged. At the latter meeting, Drs. Edward Martin, Philadelphia, F. F. Simpson, Pittsburgh, and John D. McLean, Philadelphia, were appointed a committee from this Committee on State Activities to cooperate with the committee of the American Medical Association, and it was agreed that the six should select a seventh member of this joint committee.

The joint committee met in Washington, D. C., November 1, when on motion of Dr. Edward Martin, Dr. Alexander R. Craig, secretary of the American Medical Association, was named as the seventh member and made secretary of the joint committee. On motion of Dr. Hubert Work, Dr. Edward Martin was elected chairman.

The committee was advised that the Provost Marshal-General desired to have the joint committee immediately suggest in each state a member of the Medical Reserve Corps, not assigned to duty in connection with the National Army or base hospital, in order that the Surgeon-General of the Army might be requested to order this medical officer into active duty as the medical adviser to the governor of his state in the erection of the medical advisory boards for the state. The joint committee thereupon proceeded to select a physician in each state to be recommended to act as medical adviser to the governor.

Later, the members of the committee received the following telegram:

You have been appointed a member of committee on Medical Appeal Boards of General Medical Board of Council of National Defense. You are requested to attend an important meeting of this committee at the Council of National Defense, Washington, 11 o'clock, Friday, November 16.

FRANKLIN MARTIN, Chairman, General Medical Board.

In compliance with this request, the joint committee met. Dr. John D. McLean, secretary of the Committee on State Activities of the General Medical Board of the Advisory Commission, Council of National Defense, reported to the joint committee that it had been necessary to revise the list of medical advisers to the governors, who had been suggested at the previous conference of the joint committee. A number of such changes had to be made for different reasons, among which were that the physician selected was on duty elsewhere, or was connected with a hospital unit, or was an officer in his own state. Accordingly, Dr. McLean reported that the following physicians had been selected as medical advisers to the governors and requested to report for a conference to be held on Saturday, November 18:

Alabama	James Norment Baker, Montgomery
Arizona	Francis Eppes Shine, Bisbee
Arkansas	Clinton P. Meriwether, Little Rock
California	Henry Howard Sherk, Pasadena
Colorado	Horace C. Wetherill, Denver
Connecticut	David Chester Brown, Danbury
Delaware	James A. Draper, Wilmington
District of Columbia	John Wesley Bovee, Washington
Florida	Carey Pegram Rogers, Jacksonville
Georgia	William Clifton Lyle, Augusta
Idaho	Warner Hunter Carithers, Moscow
Illinois	Frank Billings, Chicago
Indiana	Joseph Rilus Eastman, Indianapolis
Iowa	William Wilson Pearson, Des Moines
Kansas	John Franklin Hassig, Kansas City
Kentucky	Louis Samuel McMurtry, Louisville

Louisiana	Charles Jefferson Miller, New Orleans
Maryland	William Henry Welch, Baltimore
Massachusetts	Fred Lund, Boston
Michigan	Reuben Peterson, Ann Arbor
Minnesota	William James Mayo, Rochester
Mississippi	Walter B. Dobson, Jackson
Missouri	John Young Brown, St. Louis
Montana	Thomas Casey Witherspoon, Butte
Nebraska	August Frederick Jonas, Omaha
Nevada	George McKenzie, Reno
New Hampshire	John Martin Gile, Hanover
New Jersey	Philip Marvel, Atlantic City
New Mexico	John Wilson Elder, Albuquerque
New York	Charles North Dowd, New York
North Carolina	John Wesley Long, Greensboro
North Dakota	Victor Hugo Stickney, Dickinson
Ohio	Charles S. Hamilton, Columbus
Oklahoma	Claude A. Thompson, Muskogee
Oregon	Kenneth Alexander J. MacKenzie, Portland
Pennsylvania	Edward Parker Davis, Philadelphia
Rhode Island	John William Keefe, Providence
South Carolina	Robert Spann Cathcart, Charleston
South Dakota	Fred Angier Spafford, Flandreau
Tennessee	William D. Haggard, Nashville
Texas	Witten Booth Russ, San Antonio
Utah	William Brown Ewing, Salt Lake City
Vermont	John Brooks Wheeler, Burlington
Virginia	Reid White, Lexington
Washington	James R. Yocum, Tacoma
West Virginia	John Egerton Cannaday, Charleston
Wisconsin	L. Rock Sleyster, Waupun
Wyoming	Fred Wood Phifer, Wheatland

The duties of these state medical advisers and of the medical advisory boards were explained by Provost Marshal-General Crowder and Lieut.-Col. Hugh S. Johnson of the Provost Marshal-General's Office. The medical advisers were directed to report to the governors of their state and to offer to assist him in determining the number of districts and territory to be covered by each district as well as in the selection of the personnel of the medical advisory boards.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

County Medical Society Aids War Sufferers.—The Fresno County Medical Society at its meeting, November 6, voted the establishment of a permanent monthly donation of $10 to be turned over to relieve the sufferers from the war in Europe.

New Officers.—The Psychopathic Association of California, at its annual meeting at Los Angeles, November 3, elected Curtis D. Wilbur, president; Edward H. Williams, vice president; William S. James, secretary-treasurer, and Drs. Henry G. Brainerd, Charles L. Allen, Edward H. Williams and Thomas J. Orbison, all of Los Angeles, as medical members of its board of directors.

Personal.—Dr. Everett R. Smith, Los Angeles, is reported to be seriously ill at the California Hospital, Los Angeles. ——Dr. Charles W. Anderson, Los Angeles, has returned after a year's service with the Canadian Army Medical Corps on the western front.——Dr. John T. Davison, Stockton, has been reappointed health officer of San Joaquin County.—— Dr. Nathaniel B. Potter, formerly of New York, has transferred his work regarding the metabolic unit to Santa Barbara, where he will continue his research work at the Cottage Hospital.——Dr. Stanley Stillman, San Francisco, has received orders for foreign service.——Dr. Franklin S. Wilcox, Patton, superintendent of the Southern California State Hospital, has been appointed superintendent of the State Hospital at Norwich, Conn., succeeding Dr. Harry Pollack.

ILLINOIS

German, Not General.—At the meeting of the German Hospital Association, held November 15, the question of changing the corporate name of the institute from "The German Hospital of Chicago" to "The General Hospital of Chicago" was voted down, and the institution will retain its original name.

Reconstruction Service.—In the report of the Central Free Dispensary of Rush Medical College it is stated that the reconstruction of invalided soldiers and men and women physically unfit who are needed in the industries will constitute an important part of the work of the institution during the coming year. Eighteen members of the staff of the dispensary are now in the army service.

Personal.—Major William J. Swift, Chicago, commanding the Field Hospital Section of the Thirty-Third Division, Camp Logan, Houston, Texas, has resigned, and his resignation has been accepted to take immediate effect.——Major Eugene G. Clancy, Chicago, formerly of the Seventh Illinois Infantry, and later commander of the One Hundred and Thirtieth Field Hospital, has been appointed Major Swift's successor.——Dr. Clifford C. Ellis, formerly a member of the staff of the Chicago State Hospital, Dunning, has been appointed assistant superintendent of the Watertown State Hospital, succeeding Dr. Edward A. Foley, transferred to similar duty at the Chicago State Hospital.——Dr. Joseph B. Liston, Carlinville, has been appointed a member of the staff of the Jacksonville State Hospital.——Dr. Martin L. Moyer, Hillsboro, was operated on in the Hillsboro Hospital, November 2, for nephrolithiasis, and is reported to be doing well.

IOWA

Field Hospital Unit Formed.—Dr. Francis L. Love, Iowa City, has completed the organization of the Iowa Field Hospital Unit, which he will command. His officers are Drs. Virgil Orin Muench, Nichols; Philip M. Day, Barnes City, and Arthur T. Bailey, Iowa City.

Personal.—Dr. Richard H. Whalen, Tama, has been appointed physician and surgeon to the Sac and Fox Indian Agency, succeeding Dr. Benjamin Thompson.——Dr. Alexander W. Trout, Perry, received a check for $8,000 from Washington, D. C., November 1, on account of services rendered during the Civil War.——Dr. James B. Horner, Lamoni, who suffered a cerebral hemorrhage, October 25, is reported to be improving.——Fire in the office of Dr. George A. Carson, Mount Vernon, October 23, burned out the entire interior of the building.

Hospital News.—At a special meeting of the stockholders of the May Hospital Company in Charles City, October 30, it was voted that the corporation be dissolved.——Miss M. Esther Bayliss, Minneapolis, has been appointed superintendent of the Spencer Hospital, succeeding Miss Della Darling, resigned to take up Red Cross duties in France.——Work has been commenced on the new Children's Hospital in connection with the State University of Iowa, Iowa City, which is to be situated on the West Side of the Iowa River. An appropriation of $150,000 for this institution was made by the last legislature.——The Denison (Iowa) Hospital, announces that it is now thrown open to all physicians.

KENTUCKY

Sanatorium Nearly Full.—Dr. Howard E. LeCates, physician in charge of the Fayette County Tuberculosis Sanatorium, states that there are now fifty patients in the institution, which is within two of its capacity.

New Officers of State Association.—At the sixty-seventh annual meeting of the Kentucky State Medical Association, held in Louisville, November 6 to 9, the following officers were elected: president, Dr. James S. Lock, Barboursville; vice presidents, Drs. Joseph L. Barker, Pembroke; Hazelton H. Stallard, Pikeville, and James C. Douglass, Franklin; councilors, third district, Dr. Joseph N. McCormack, Bowling Green; sixth district, Dr. Robert C. McChord, Lebanon, and ninth district, Dr. James W. Kincaid, Catlettsburg, and delegates to the American Medical Association, Drs. William W. Richmond, Clinton, and Carl L. Wheeler, Lexington (reelected).

LOUISIANA

Infant Clinic.—A free clinic for infants up to the age of 9 months has been established at the Lying-In Hospital, New Orleans. The clinic will be in charge of Dr. George Bloom, and will be open from 11 to 12 o'clock daily.

Personal.—Dr. William H. Robin, superintendent of the New Orleans City Board of Health, was given a handsome gold badge by the employees of his department, November 3.——Dr. George W. Martin, Arnaudville, was made superintendent of oil inspection by the state board of health, October 29.——Dr. Thaddeus P. Bell, New Orleans, has been elected field secretary of the Louisiana Anti-Tuberculosis League for the coming year.——Asst. Surg. Howard F. Smith, U. S. P. H. S., has been appointed, by the president of the state board of health, director of the civil sanitary dis-

trict surrounding the Thirty-Ninth Division Army Camp.—— Dr. Ernest S. Lewis, New Orleans, has been appointed consulting gynecologist; Dr. Charles Chassaignac, consultant in genito-urinary diseases, and Dr. Roy M. Van Wart, psychiatrist, to Charity Hospital, New Orleans.

MARYLAND

Diphtheria at Fullerton.—There has been one fatal case of diphtheria at Fullerton, Baltimore County, and considerable anxiety exists among the parents of children there. Dr. Harry M. Slade, Reisterstown, county health officer, will have all cases of the disease which may develop isolated, and every precaution will be taken to prevent an epidemic.

Personal.—Dr. Lewellys F. Barker, Baltimore, was elected president of the Southern Medical Association at the annual meeting of the association held in Memphis, Tenn.——Dr. Franklin P. Mall, professor of anatomy in the medical department of the Johns Hopkins University, a nationally known authority on anatomy and author of several textbooks on the subject, is critically ill at the Johns Hopkins Hospital, following two operations to remove gallstones.

MICHIGAN

New Hospital.—A new fireproof contagious disease hospital, to cost about $12,000, is to be erected by the St. Luke's Hospital Association, Marquette.

Personal.—Dr. John C. Lampman, Hastings, injured his hip seriously by a fall from a stepladder, November 7.—— Dr. Frederick C. Warnshuis, Grand Rapids, chief surgeon of the Pere Marquette System, fractured his leg in a collision between his automobile and another car, November 5.

Health League Recommended.—In his address, made on retiring from the presidency of the Michigan Anti-Tuberculosis Association, Dr. Arthur F. Fischer, Hancock, chief of the medical staff of the Quincy Line, recommended the establishment of a Good Health League, which would come closer to the people than an antituberculosis association could.

MISSOURI

Goodwin and Dercle in St. Louis.—Col. T. H. Goodwin of the British Army Medical Service and Col. C. U. Dercle of the French Army Medical Service were guests of the Medical Section of the State Committee on National Defense at St. Louis, November 16. They delivered addresses before the Chamber of Commerce and the City Club at a luncheon, were enteretained at a dinner at 6 o'clock at the St. Louis Club, and at 8 o'clock adressed a large audience in the Central High School. Colonel Dercle addressed the St. Louis Medical Society, November 17.

Reports of Births.—For failure to report the birth of a child, a St. Louis doctor who had knowledge of the birth was arrested and fined $5, the midwife who delievered the child was fined $10. The baby is blind. After birth the baby developed inflamed eyes which the midwife treated for nine days and then called the physician, who was unable to save the eyes, and failed to report the birth. Commenting on this neglect the St. Louis *Post Dispatch* remarks editorially: "In the light of these facts, we venture the opinion that St. Louis should make an effort to keep as perfect a record of new babies as it does of new corpses."

Personal.—Dr. J. Carl Drake, formerly of St. Louis, now lieutenant in the One Hundred and Thirty-Eighth Infantry (Fifth Missouri) has been confined to the base hospital, Fort Sill, Okla., for several weeks. He was operated on November 1, and will soon be able to resume work in camp.——Dr. E. H. Trowbridge, physician at the tuberculosis hospital and municipal farm of Kansas City, has been elected secretary of the hospital and health board of Kansas City, and will be in charge of the medical inspection of the schoolchildren.—— Dr. Guy L. Noyes, dean of the Medical School, University of Missouri, has been relieved from military duty at Camp Funston and returned to Columbia to continue his school duties.——Dr. William W. Duke, Kansas City, was a guest at a joint meeting of the St. Louis Medical Society and the St. Louis Dental Society, November 3, and delivered an address on "Dental Sepsis as a Focal Infection."

MONTANA

Scarlet Fever.—On account of the prevalence of scarlet fever in Helena, a meeting of state and county health officials was held in that city, October 26, at which it was decided to take stringent measures to stamp out the disease. Dr. John H. Dent, East Helena, was appointed deputy county health physician to assist the county physician with the scarlet fever cases.

Hospital Notes.—At the meeting of the board of trustees of the Butte Deaconess Hospital Association, October 31, contracts were signed for an addition to the present building to cost $21,500, and to accommodate forty patients.——The Grandview Hospital, located just outside the city limits of Malta, was destroyed by fire, October 24. All patients were safely removed from the institution.

Personal.—Dr. Herbert H. Judd, Bozeman, has been appointed a member of the State Board of Medical Examiners, succeeding Dr. William L. Renick, Butte, resigned.——Dr. Julius H. P. Gauss, Lewistown, has been nominated by the administrative board of the Mayo Clinic, Rochester, Minn., for a fellowship in internal medicine in the Mayo Foundation.——Dr. Oscar M. Lanstrum, Helena, has been elected a vice president, and Drs. Thomas C. Witherspoon, Butte, and William F. Cogswell, Helena, members of the executive board of the Montana State Association for the Study and Prevention of Tuberculosis.

NEBRASKA

Friction in State Board.—The state board of health, October 19, made an investigation of the friction in the administration staff of the board. Health Commissioner Tenney, Mrs. Andrews, the statistician, and Dr. William F. Wild, state epidemiologist, are said to be involved in this investigation.

Personal.—Dr. Benjamin F. Williams, superintendent of the Lincoln State Hospital for the Insane, presented his resignation to take effect Jan. 1, 1918, and will enter private practice in Lincoln.——Dr. William J. Davies, Fremont, who was operated on for the removal of gallstones in the Nicholas Senn Hospital, Omaha, October 31, is reported to be making satisfactory progress toward recovery.

NEW YORK

New York City

The Harvey Society.—The second of the present course of Harvey Society lectures was given at the New York Academy of Medicine, November 24, by Dr. Linsly R. Williams, on "Medical Problems of the War."

In Memory of Dr. Lewis Atterbury Stimson.—Exercises in honor of the memory of Dr. Lewis Atterbury Stimson, professor of surgery in Cornell University Medical College, were held in the auditorium of the college, November 16. Addresses were made by Dr. Jacob Gould Shurman, Elihu Root, Dr. W. Gilman Thompson and Dr. Edward L. Keyes.

Representatives of Red Cross Meet.—A meeting of representatives of the Southern Section of New York met in this city recently for the purpose of stimulating the war work and adding to the efficiency of the Atlantic Division. Dr. Thomas D. McRossie, Brooklyn, member of the Red Cross Commission to France, addressed the representatives. He laid special stress on the necessity of keeping up the work of making surgical dressings.

Personal.—Dr. J. Ramsay Hunt has been appointed associate in neurology and psychiatry on the staff of the New York City Children's Hospital and School, Randall's Island. ——Dr. William M. Leszynsky has been appointed neurologist to the Manhattan State Hospital.——Drs. Morris Steinberg and Leo Lieberman, members of the house staff of St. Mary's Hospital, Jamaica, were injured in a collision between the ambulance in which they were riding and an automobile, November 9.——Dr. Thomas F. Reilly has been appointed to the chair of medicine in the Fordham University School of Medicine.

Laboratory Course for War Service.—Through the united efforts of the War Service Committee of the Medical Women's National Association, New York University, and the bureau of laboratories of the department of health, a course in medical laboratory work is offered to applicants who have the preliminary training in science and scientific methods obtained in a four years' college course or the equivalent. The object is to fit workers for war service in medical laboratories in this country and in Europe. The course will extend over a period of three months, requiring six hours' work each day. Application may be made to Dr. Anna W. Williams, Research Laboratory, foot of East Sixteenth Street. The fee is $75.

NORTH CAROLINA

Personal.—Dr. Charles T. Nesbitt, Wilmington, has been appointed health commissioner of Akron, Ohio.——Dr. William K. Reid has resigned as superintendent of the health department of Charlotte.

State Quarantine Law Enforced.—Seventy-seven counties of North Carolina have at present put into operation the new state quarantine law. Twenty-three counties have so far made no progress in this regard.

Orthopedic Hospital for Gastonia.—Mr. R. B. Babington, Gastonia, has donated 20½ acres of land on which is to be established an orthopedic hospital, the charter for which has already been granted by the state.

PENNSYLVANIA

Physicians Needed.—The Pennsylvania State Committee of the Council of National Defense, Medical Section, announces that the committee has applications at this time pending to fill the following positions in hospitals and institutions in or near Philadelphia: Medical: Superintendent of hospital, salary $1,500 per annum; two clinical assistantships, psychopathic, salary $600 per annum; assistant bacteriologist, salary $1,000 per annum; anesthetizer, salary $30 per month. Surgical: Assistant surgeon, salary $3,000 per annum; visiting surgeon, dispensary, no salary; visiting ophthalmologist, no salary; visiting laryngologist, no salary. Internships, general internships, resident physicians in special hospitals, etc. Applicants for these positions should communicate with the secretary, Charles Scott Miller, M.D., giving school and year of graduation, qualifications, credentials, etc., and salary desired.

Philadelphia

Addresses Before Medical Societies.—Dr. Rosalie Slaughter-Morton, New York, chairman of the Woman's Committee of the Council for National Defense, delivered an address on "War Service for Women Physicians" at the meeting of the Medical Society of the Woman's Hospital, November 20.—— Dr. Arthur S. Kendall, Sydney, N. S., delivered the Gross Lecture, "Recent Developments in Intestinal Bacteriology," at the meeting of the Pathological Society, November 22.

Philadelphia County Medical Society.—At the meeting of the Philadelphia County Medical Society, to be held November 28, Major David Silver, Pittsburgh, assistant director of the Division of Military Orthopedic Surgery, will discuss the surgical aspects of the function of orthopedic surgery in the war, and will detail what has been accomplished and what his branch intends to do for the service. The civic aspects will be discussed by Major Henry R. Hayes of the Sanitary Corps. The discussion will be opened by Dr. Gwilym G. Davis, professor of orthopedic surgery in the University of Pennsylvania, and a member of the Orthopedic Advisory Council.

Optometrists to Be Ousted.—About 120 fake "eye-doctors" are to be thrown out of business shortly in this city. The unscrupulous individuals who have not hesitated to advertise themselves as optometrists, when they had no right whatever to that title, and who have ruined the eyes of thousands of their patients by prescribing glasses or giving treatment which was harmful in the extreme, will be ousted within a few months, if the plans of the State Board of Optometrical Education, Examination and Licensure are realized. There are about 2,000 practicing optometrists in Pennsylvania, 800 of whom have offices in this city. The state board today began examining the 800 local optometrists, 300 taking the prescribed examinations in the Central High School. Two more days will be required to examine the others. The examinations, which cover five subjects, are the first to be held under the new law to license men engaged in the practice of optometry, and are designed to eliminate the charlatan practitioner.

WISCONSIN

Tells of War Surgery.—At the meeting of the Beloit Six O'clock Club, November 14, Major Charles McDonald spoke on war surgery and Red Cross work in Austria-Hungary, where he has spent the last three years.

Anthrax in Milwaukee.—A second case of anthrax has been discovered in Milwaukee in the same tannery where the first victim was found. The infection is not so severe as in the first case, and the patient is under treatment in the South View Isolation Hospital.

All Physicians Medical Examiners.—The medical examinership for the Wisconsin State Tuberculosis Sanatorium has been extended to include all regularly licensed physicians who are citizens of Wisconsin. The former list will be used in cases in which the applicant for the sanatorium does not give the name of his family physician.

Hospital Items.—The Franson Hospital, Augusta, has been sold to Mr. Robert Reider, Humbird.——The fund-raising campaign for the Ashland General Hospital began, November 12. A tentative site for the tuberculosis sanatorium for the northern part of the state has been selected on the Bayfield County side of Chequamegon Bay. The last legislature passed a bill appropriating $75,000 for this project.

Personal.—Dr. Matthew N. Federspiel, Milwaukee, was elected president, and Dr. Henry McCabe, Milwaukee, vice president of the Marquette University Alumni Association. ——Dr. Thaddeus D. Smith, Neenah, who was recently wounded in a German air raid in a base hospital behind the trench line, is under treatment in a hospital in England.—— Dr. Angus E. MacMillan, Stevens Point, was operated on in Chicago for removal of the gallbladder, November 1, and is reported to be doing well.

New Officers.—At the annual meeting of the West Wisconsin District Medical Society, held in Eau Claire, Dr. Fred S. Cook, Eau Claire, was elected president; Dr. Nels Werner, Barron, vice president, and Dr. Eugene E. Tupper, Eau Claire, secretary.——At the annual meeting of the Wisconsin Anti-Tuberculosis Association, held in Milwaukee, November 9, the following officers were elected: president, Dr. Timothy L. Harrington, Milwaukee; vice presidents, Drs. John W. Coon, Stevens Point, and Charles D. Boyd, Kaukauna; recording secretary, Dr. J. Gurney Taylor, Milwaukee, and treasurer, Mr. J. H. Kopmeier.

CANADA

Hospital News.—Finance Commissioner Bradshaw, Toronto, and Medical Officer of Health Dr. Charles J. C. O. Hastings have made a joint report to the board of control that the boards of the several hospitals in that city be coordinated or else governed by a commission, with a general manager. Duplication of certain expenditures is costing the city thousands of dollars. The city contributes $900,000 annually to the hospitals and is not in a position to see how the money is being expended. Recently the hospitals have requested grants from the city treasury as follows: General, $50,000; Western, $20,000; Toronto Free Hospital for Consumptives, $40,000; Hospital for Sick Children, $38,000, and Women's College Hospital, $33,000. The two officials recommended that the grant to the General Hospital be conditioned on the government of Ontario making a grant of $25,000; that the grant to the Western be $11,182; that the Hospital for Consumptives get the full amount of $40,000 asked for; that the full amount asked be paid the Hospital for Sick Children, and that the grant to the Woman's College Hospital be deferred until after the war, as the money was to be used for the erection of a new wing.

Personal.—Dr. Charles Sheard, sometime medical officer of health, Toronto, and formerly professor of preventive medicine in the University of Toronto, has been chosen to contest South Toronto constituency in the pending federal elections. ——Dr. S. Hawden, who has been in charge of the Dominion government laboratory, Agassiz, B. C., has been appointed dominion pathologist in succession to Dr. Charles P. Higgins, Vancouver, who has resigned to enter business.——Dr. Allen M. Baines, Toronto, addressed the graduating class of nurses at the Hospital for Sick Children, November 16. He emphasized the importance of nurses being good readers, maintaining that elocution should be part of their course, inasmuch as reading is a source of very great pleasure to a patient in a convalescent stage.——Lieut.-Col. Clarence L. Starr, Toronto, who has been doing orthopedic work in England for a year, has returned to Toronto. In a short address to the nurses of the Hospital for Sick Children he spoke of how splendidly the nurses graduated from that hospital had upheld the honor of the hospital in France and England.——Major Harley Smith, home for a short furlough in Toronto, will shortly return to England and will probably be attached to a hospital in France, as Major Smith speaks French and Italian fluently. ——Lieut.-Col. Charles H. Gilmour, Toronto, is now surgeon-in-chief, Ontario Military Hospital, Orpington, England, Lieut.-Col. William J. O. Malloch, Toronto, having been transferred to the hospital at Basingstoke.——Capt. J. Harvey Todd, Toronto, who has been overseas nearly three years, has returned to Quebec, and is now with Militia Headquarters as A. D. D. A. M. S., fifth district. His services abroad have been recognized by promotion to the rank of major.——Dr.

George C. Livingstone, who for the past year has been assistant superintendent of the Toronto General Hospital, has severed his connection with that hospital, and has offered his services for overseas. For a time he will be attached to the C. A. M. C., Exhibition Camp, Toronto.

GENERAL

Hospital Car.—A hospital car made at the suggestion of Dr. David O. Edson, New York, to transport sick and injured soldiers from the cantonments to base hospitals has just been completed by the mechanical department of the Erie Railroad. This car will accommodate twenty-eight patients, and has on each side seven two-tier berths.

Southern Tuberculosis Fighters Meet.—At the annual meeting of the Southern Tuberculosis Conference, held at the Pine Breeze Sanatorium, Chattanooga, Tenn., the following officers were elected: president, John Stagmier, Chattanooga, Tenn.; vice president, Boulton Smith, Memphis; members of the executive committee, Drs. Augustus C. Shipp, Little Rock, Ark.; William H. Cox, Jacksonville, Fla.; Henry Boswell, Jr., Magee, Miss.; Lewis B. McBrayer, Sanatorium, N. C.; William N. Lackey, Gallatin, Tenn., and directors, Drs. David L. Flanary, Dyersburg, Tenn., and Henry P. Coile, Knoxville, Tenn.

Insurance Company Offers Vital Statistics.—The statistical bureau of the Metropolitan Life Insurance Company invites physicians, public health and social workers to make use of its collection of mortality statistics. These statistics present the principal causes of death among white and colored wage earners in the United States and Canada. The material covers over 10,000,000 individuals for each of the six years, 1911 to 1916. Death rates are available for each race, by sex and by age period. All inquiries should be addressed to Statistical Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City.

FOREIGN

Training School for Women Workers.—Through the efforts of Mr. Edouard Herriot, mayor of Lyon, France, a professional training school for the higher technical development of women has been established and opened its first session, Oct. 1, 1917. The curriculum of the school will include a commercial course and a technical course of two years each. The minimum age limit for entrance has been fixed at 16 years, and an examination for admission will be required. An elaborate course of study in commercial and technical subjects has been provided.

In the munition plants of the city, in May, 1917, out of a total of 12,000 workers, more than 50 per cent. were women. Efforts are constantly being made to improve the surroundings of the women and to make the work congenial. Hygienic conditions are being improved and rest rooms provided. Extra holidays will be granted the women, and expectant mothers are made an allowance of 4.50 francs per day, for a period of forty days, making a total allowance of about $36. If both father and mother are employed in any plant, the children are cared for during working hours by especially organized asylums. The women workers are divided into two squads, one working from 6:15 a. m. to 2:15 p. m., with an interruption of 45 minutes for luncheon, the second squad working from 2:30 to 9:30 p. m., with the same interval for the evening meal.

LONDON LETTER

LONDON, Oct. 30, 1917.

The War

ARRIVAL OF SECOND AMERICAN ORTHOPEDIC CONTINGENT

The second American orthopedic contingent, composed of forty-two medical officers under the direction of Major Goldthwaite, has arrived. All of the officers as well as three of engineering experience commissioned in the sanitary corps are to take charge of the development of curative workshops in the American orthopedic hospitals in France. There are also twelve orthopedic nurses as a nucleus around which a nursing staff is to be developed. All the medical staff except the director are to be distributed temporarily through the British orthopedic centers. Arrangements have been made by which these centers can be used for training Americans in orthopedic work with the idea of providing relief for the large number of medical officers that will be required for this special work. When these men are needed for service in the American hospitals in France, another group will be sent from home to take their place in the British hospitals. The rotation will be continued until the American hospitals are fully staffed. Major Goldthwaite is going on to American headquarters in France to organize the orthopedic hospital with the American Army.

FOOD CONTROL

All the principal foodstuffs have been brought under control, that is to say, bread, flour, meat, potatoes, sugar, tea, milk, butter, cheese and bacon. Control has further been extended to certain subsidiary foods, such as jam, oatmeal, dried peas and beans, chocolate and sweetmeats, and also to feeding stuffs for livestock. Prices have been or are being fixed at every stage of production and distribution of controlled commodities, from the stockyard or barn to the shop counter. The speculative middleman has been eliminated, and the charges that may be made by the necessary middleman and the retailer are being defined and regulated by the fixing of prices or profits. The prices to be paid for live cattle have been fixed on a descending scale, so as to show an ultimate reduction of from 20 to 25 per cent. Butchers' profits are limited to 5 cents per pound, or 20 per cent. on their fortnightly turnover, whichever is less. These measures should ultimately secure an average reduction in the retail price of meat equivalent to the reduction in the purchase price of cattle. As compared with last July, the wholesale price of British beef has fallen 17 per cent., and the wholesale price of mutton, 19 per cent. This fall is already reflected in retail prices, but some time must elapse before its influence can be fully ascertained. As a result, a guaranty to growers of $30 a ton on the acreage under potatoes has been considerably increased, and there is an abundant crop. The retail price of these is controlled, and as a rule will be about 2 cents per pound. Complaints have been made in regard to the distribution of sugar rather than to its price. A new scheme of sugar distribution is designed to secure that such supplies as are available shall be distributed without suspicion of favor. It safeguards the position of the householder, whether he be rich or poor. Sir Arthur Yapp, director of food economy, advocates simpler meals of two courses only at midday or evening dinner, at any rate on three days of the week, and also extended use of communal kitchens. He suggests no butter or bread for midday or evening dinner, but extra vegetables in their place, no cream except for invalids and children; no tea except for tea meal, no open sugar bowl, and no ham or bacon except for breakfast. There must be better preparation of food by expert cooking. To obtain every possible assistance in the new campaign he is relying largely on the churches, but is hoping also for the help of cooperative societies and the friendly society organizations. Then he is bringing into effect an organization to be known as the League of National Safety, in which he aims first at enrolling 10,000 members, to be followed almost immediately by 100,000 and later by a million. Speaking of the difficulties of rationing, he said that anything of that kind might be good enough for Germany, but it was not quite English. He had unbounded faith that English people, when they realized the needs of the situation, would respond loyally and would render unnecessary the setting up of machinery for compulsory rationing.

CARE OF WOMEN MUNITION WORKERS

Various precautions are being taken by the Ministry of Munitions to maintain health among the women munition workers who are now employed by thousands throughout the country. The hours of labor, though necessarily long, are being steadily reduced, and Sunday labor is being abolished, except when the work is bound to be continuous. In no case may a woman work longer than sixty hours a week, unless a special permit be granted to the employer by the Home Office, after consultation with the Ministry of Munitions. Without such permission, the maximum hours of a woman worker on a twelve hours' shift are ten and a half a day, with seven hours on Saturday, a minimum daily interval of one hour for dinner and half an hour for tea being enforced. The welfare of women in engineering shops is being safeguarded by the Health of Munition Workers' Committee and the Welfare Department of the Ministry. Canteens, cloak rooms and rest rooms are being increasingly introduced into the factories. Seats for the workers, labor-saving applicances and safety equipment in connection with the machinery are being more extensively employed. Welfare supervision in the factory has become a normal feature, and a complete system of housing munition workers in bungalows, hostels or colonies has sprung up.

Sir William Herschel

Sir William Herschel, author of the finger-print identity system, has died. Born in 1833, he was a grandson of the famous astronomer, the discoverer of Uranus, and a son of the no less eminent astronomer and chemist, Sir John Frederick Herschel. He entered the Indian Civil Service in 1859, after the suppression of the mutiny. He applied the first tests of the practicability of using finger-print impressions as a means of identification. His object was to circumvent the personation then prevalent in the Bengal courts of justice and which, in the general state of illiteracy, could seldom be checked by a comparison of signatures. As early as 1823, Purkenje, the physiologist, had drawn attention to the subject of finger impressions; but it was Herschel, more than a generation later, who proved by practical application their individuality and their persistence for a term of at least fifteen years. His recommendation of their general adoption for civil purposes throughout India was not followed, and the practice lapsed after his departure for other spheres. But his enthusiasm for the system did not abate; and though he evolved it amid "depressing difficulties," he had the satisfaction in later years of seeing his methods applied in all parts of the world on a larger scale than he had ever anticipated. In 1897, nearly twenty years after he had left the country, the government of India accepted the recommendation of an expert committee that finger-prints should be adopted as a means of identification both for civil and for criminal purposes as being in every way superior to the anthropometric method.

PARIS LETTER

PARIS, Oct. 25, 1917.

Death of Professor Dastre

French science has sustained a great loss in the person of Professor Dastre, who died as the result of an automobile accident, at the age of 73. He was one of the most noted French physiologists, one who followed in the footsteps of Claude Bernard and Paul Bert, whose student and collaborator he was. [The cable despatch stated that he had been run over by an automobile at the same corner where Professor Curie met with a similar fatal accident a few years ago.]

Jules Albert Franck Dastre was born in Paris, Nov. 7, 1844. He was a student at the Superior Normal School, then a Fellow of physical science, licentiate of mathematical science, doctor of natural science, and then he entered on the study of medicine, presenting his doctorate thesis on "Diabetic Asphyxia" in 1879. From 1872 to 1876 he was laboratory assistant of Claude Bernard at the College of France, and of Paul Bert at the Museum of Natural History. He was appointed supplementary professor of physiology at the Faculté des Sciences in 1876, and in 1887 he was made full professor. In 1904, he was made a member of the Académie des sciences, and in 1908 of the Académie de médecine.

DASTRE'S WORK

Dastre's researches in physiology were conducted on various phases of this science. Particularly worthy of note are his researches on the composition of birds' eggs and their value as nutriment to the embryo; on the storing up of fats, their digestion, their origin and their utilization in the organism; the rôle played by the starches and various sugars in nutrition. He thus cleared away many obscurities in the phenomena of nutrition, specifying the rôle played by fat bodies in these processes and the production of fat bodies by various digestive glands. In the domain of the nervous system he demonstrated the general existence, in all the organs, of inhibiting nerves which oppose the exciting action of other nerves. His studies on the physiology of the heart added to our knowledge of the causes of the rhythm of the heart beat, and his researches on the liver threw new light on the multiplicity of functions of that organ, notably in the production of fats and in the storing up of the iron necessary for the formation of red blood cells. Some of the more important of his works are the following: "Experimental Researches on the Vasomotor Nervous System" (1884), in collaboration with J. P. Morat; "Anesthetics: Physiology and Surgical Application" (1890); "Researches on the Coloring Matter of the Liver and of the Bile and on Liver Iron" (1898), in collaboration with N. Floresco; "Life and Death" (1903). He also was a collaborator on the staff of the French *Scientific Review, Philosophic Review* and the *Review of Two Worlds.*

The War

TREATMENT OF WOUNDS OF THE SOFT PARTS

At a recent session of the Société de chirurgie de Paris, Dr. P. Duval, professor agrégé at the Faculté de médecine de Paris and surgeon of the hospitals, presented a very interesting communication on the results he has obtained in the army, thanks to a new special organization, created at his instigation, for the distribution, evacuation and treatment of soldiers sustaining wounds of the soft parts, the most numerous of all. Treated under the best conditions they heal quickly and well; treated under less favorable conditions, they may be followed by the worst complications. The fundamental principle, which, apparently, is accepted by every one today, is that all wounds of the soft parts should be treated within the period of the first twelve hours by opening up the wound widely and removing all foreign bodies. The surgical wound left can then be treated either by immediate suture or by secondary suture done after progressive sterilization. The immediate suture is beyond question the method of choice, but it can be carried out only under fixed conditions: experienced surgeons, perfect equipment, and every possibility of a hospital residence of at least fifteen days with the operating surgeon. For the last reason, primary suture may be made the rule during quiescent periods, but would be the exception during periods of activity when the majority of the wounds of the soft parts can get only secondary suture.

DEFERRED PRIMARY SUTURE

In order to remedy this state of affairs, as far as possible, Duval has adopted the following organization: Behind the evacuating centers, but as near to them as the commandant will permit, large surgical formations, with numerous operating rooms, are established, to be used solely for the treatment of wounds of the soft parts. Two such formations, accommodating many hundreds of wounded, are designated to receive soldiers who are to be treated by primary suture. The other surgical formations are to take care of such wounded as have been sent from the evacuation hospital, but they must send them on to the rear as quickly as possible, in from eight to twelve hours after the primary treatment. Instructions are given to these surgical groups to treat these wounds as follows: Lay them wide open, excising all dead tissue, removing foreign bodies, and then applying simple aseptic dressings after ether lavage. The evacuation of the wounded so treated is finally made to a designated center in the rear where, at the proper time, secondary suture is performed.

RESULTS

By reason of the perfect teamwork done by the surgical formations at the front and those farther inland, the most remarkable results have been obtained, as is shown by the following data: About one third of these wounded were sent to the two centers provided for treatment by immediate suture. Of this number, 67.5 per cent. were treated by primary suture, with only 4 per cent. of failures. Not a single grave accident was noted. Two thirds of the wounded were operated on in the special formations reserved for the treatment of these wounds in the manner outlined above, that is, without suture. Not a single accident was noted. These patients were sent to the base hospitals in less than twelve hours after operation and in less than twenty-four hours after they were wounded. Of those wounded who were operated on in the front line and then evacuated rapidly to the base hospitals, and had their wounds sutured secondarily, 81 per cent. were so treated within eleven days after having been wounded and operated on. No untoward results were noted among this class; no deaths, no gas gangrene, no tetanus, only one case of septic complication—an amputation for arthritis of the knee with purulent discharge, which developed as a late complication of a wound of the foot. Fully 84 per cent. of the wounded evacuated were sutured and cured completely within five weeks after they were wounded.

One sees that it is hardly necessary to regret that immediate primary suture, which is the method of choice, cannot be applied to all the wounded during an offensive movement. The retarded primary suture, that is, suture done after several days, yields equally good results as immediate primary suture. The systematic progressive sterilization of surgical wounds is therefore a method which is useless in about two thirds of the cases, and the secondary suture should give way to deferred primary suture. The latter has further the following advantages: simplification of the treatment, a notable reduction in the length of the treatment, and lastly—

to which too much attention cannot be drawn—a more complete cure. The primary delayed suture, when made in healthy tissues, restores these tissues to almost perfect function. The cicatrix is soft, flexible and nonadherent.

Motherhood Welfare Work in Factories

The manufacturers who employ, for purposes of national defense, a large number of female workers are taking steps to insure the protection of motherhood. They are creating many associations formed for the purpose of providing various measures needed for the protection of these women. One of these associations, the Maternité ouvrière de Levallois-Perret et de Neuilly, has built, on a large piece of ground in close proximity to several large factories, where hundreds of women are employed, a model motherhood welfare institution, which was opened by M. Loucheur, minister of munitions, MM. Albert Thomas and Paul Strauss. In this institution are provided all of the hygienic and comfort measures demanded by the Committee on Women's Work appointed by the minister of munitions. On the occasion of this dedication, M. Loucheur declared himself to be in perfect accord with his predecessor, M. Albert Thomas, in regard to the welfare work among workers, especially the protection of the health of female workers. He has given freely of his counsel for the development and perpetuity of this effort, as outlined by the originators of this movement.

Discontinuation of the Meatless Days

The régime of the meatless days is coming to an end. The results of the inquiry made by the minister of agriculture as to the supply of grazing live stock (*cheptel*) on July 1, 1917, which was published in the *Journal Officiel*, permitted of taking count up to a certain point of the consequences resulting from the institution of meatless days. The total figures for each kind of stock are: horses, 2,282,560 head; cattle, 12,443,304 head; sheep, 10,586,594 head. Comparing these figures with those given Dec. 31, 1916, it will be noted that since that time the live stock has been augmented by about 36,000 head of horses and about 100,000 head of cattle, although the number of sheep has diminished about 250,000 head and pigs about 160,000 head. It was mainly an insufficient supply of potatoes which was responsible for the reduction in the raising of pigs, and therefore the steady increase in price. This year, however, the potato harvest has been most abundant, and there is reason therefore to count on larger numbers of hogs being raised.

Marriages

LIEUT. AMBLER BAXTER PATTON, M. R. C., U. S. Army, Great Falls, Mont., to Miss Ruth Wells, of Athens, Ga., at Charlotte, N. C., October 21.

CHARLES G. MORGAN, M.D., to Miss Garnett German, both of Moundsville, W. Va., at Fairmont, W. Va., October 4.

GUY H. WILSON, M.D., Bicknell, Ind., to Miss Maude Ecker of Collinsville, Ill., at Bicknell, November 1.

JULIUS MORDECAI ROSENTHAL, M.D., to Miss Renée Prisament, both of Monticello, N. Y., October 6.

FRANK WALTER HANNUM, M.D., Muskegon, Mich., to Miss Lynne Carr of Rhinelander, Wis., October 17.

IRVING HOTCHKISS PARDEE, M.D., to Miss Margaret E. Trevor, both of New York City, October 27.

DANIEL T. SULLIVAN, M.D., Mansfield, Mass., to Miss Helen M. Leonard of Brockton, Mass., October 30.

EUGENE EMMETT BIRMINGHAM, M.D., to Miss Theresa Celia Kelly, both of Chicago, October 24.

LEMUEL HARRIS KERR, M.D., Louisville, Ky., to Miss Marie Chenoweth, at Cincinnati, November 1.

GUNDMUND J. GISLASON, M.D., to Miss Esther Thorgrimsen, both of Grand Forks, N. D., October 24.

STERLING PRICE BOND, M.D., Little Rock, Ark., to Miss Mary Kitchens of Denver, October 24.

JOHN CARL WAHL, M.D., Scranton, Pa., to Miss Ethel Somers of Philadelphia, October 25.

STANLEY BRADY, M.D., to Mrs. Lillian London, both of New York City, October 24.

GEORGE ARTHUR BEMIS, M.D., to Miss Ruth Lewis, both of Garner, Iowa, October 31.

Deaths

Charles Henry Stanley Davis, M.D., Meriden, Conn.; New York University, New York, 1866; aged 77; clerk of the Meriden City Medical Association since 1870; representative to the state legislature in 1873, and 1885-1886; mayor of Meriden in 1887-1888, and city treasurer, 1898-1899; physician to the State School for Boys from 1895 to 1900; physician to the Curtis Home for Old Ladies and Orphans from 1886 to 1906; trustee, secretary and treasurer of the State School for Boys for four years, and president of the Meriden Board of Education for six years; well known as an archeologist; editor of *Biblia*, a journal of oriental archeology, since 1887; and associate editor of the *American Antiquarian and Oriental Journal*, since 1906; author of many books on science and archeology; died in the Middletown State Hospital, November 7.

Margaret Abigail Cleaves, M.D., Yonkers, N. Y.; State University of Iowa, Iowa City, 1873; aged 69; a Fellow of the American Medical Association; formerly assistant physician at the State Hospital for the Insane, Mount Pleasant, Iowa; and physician in charge of the female department of the State Hospital for the Insane, Harrisburg, Pa.; founder and director of the New York Electro-Therapeutic Clinic Laboratory and Dispensary; author of "Light Energy: Its Physics, Physiological Action and Therapeutic Application"; died in a hospital in Mobile, Ala., November 14.

W. Godfrey Hunter, M.D., Louisville, Ky.; Miami Medical College, Cincinnati, 1871; aged 76; a surgeon in the Federal service throughout the Civil War; a member of Congress from the third and eleventh districts of Pennsylvania; United States minister to Guatemala during President McKinley's administration; died in the Deaconess Hospital, Louisville, November 2, from hemorrhage of the kidney.

Frederick Boty Elliott, M.D., Pittsburgh; West Pennsylvania Medical College, Pittsburgh, 1896; aged 45; formerly a Fellow of the American Medical Association; local surgeon to the Pittsburgh and Lake Erie and Baltimore and Ohio railroads; at one time a member of the local school board; a member of the staff of the Allegheny General Hospital; died at his home, November 4, from heart disease.

Lewis Arthur Welles Alleman, M.D., Geneva, N. Y.; Jefferson Medical College, 1886; aged 55; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; formerly professor of diseases of the eye in Long Island College Hospital, Brooklyn; died at his home, November 3.

Jacob Maurice Morin, M.D., Brockton, Mass.; Long Island College Hospital, 1899; aged 48; a Fellow of the American Medical Association, and once president of the Brockton Medical Association; a member of the surgical staff of the Brockton Hospital; died at his home, September 12, from chronic interstitial nephritis.

Thomas Maher Reade, M.D., Springfield, Ohio; Washington University, St. Louis, 1871; aged 67; a member of the Ohio State Medical Association; and for a number of years a member of the board of trustees of the Springfield City Hospital; died in that institution, October 31, from cerebral hemorrhage.

Estella Horton Houghton, M.D., Chicago; Northwestern University Woman's Medical School, Chicago, 1899; aged 54; formerly a member of the Illinois State Medical Society; a specialist on diseases of the eye, ear, nose and throat; died in Wesley Hospital, Chicago, October 24, from cerebral embolism.

William Shannon Pollard, M.D., Evansville, Ind.; Miami Medical College, Cincinnati, 1871; aged 79; a veteran of the Civil War; formerly a member of the Indiana State Medical Association, and a member of the staff of Deaconess Hospital, Evansville; died in a hospital in that city, November 1.

Harry A. Nickerson, M.D., Camden, Del.; National Normal University, Lebanon, Ohio, 1890; Medico-Chirurgical College of Philadelphia, 1899; aged 50; formerly a Fellow of the American Medical Association; a member of the Delaware State Medical Society; died at his home, November 4.

Marshall Curtis Munn, M.D., Sycamore, Ill.; College of Medicine and Surgery, Physio-Medical, Chicago, 1893; Hospital College of Medicine, Louisville, Ky., 1895; aged 58; a member of the Illinois State Medical Society; died at his home, October 15, from tuberculosis of the larynx.

Acting Asst.-Surg. Ward Boleyn MacCaffry, U. S. P. H. S., Fortress Monroe, Va.; Medico-Chirurgical College of Philadelphia, 1906; aged 42; for many years in charge of the Cape Charles Quarantine Station; died in Philadelphia, November 4, from a general nervous breakdown.

Emmet Lincoln Smith, M.D., Bellefontaine, Ohio; Chicago Homeopathic Medical College, 1888; College of Physicians and Surgeons, Chicago, 1893; aged 52; for many years a practitioner of Zanesfield, Ohio; died at his home, November 3, from cerebral hemorrhage.

T. R. League, M.D., Greenville, S. C.; Medical College of Georgia, Augusta, 1868; aged 71; formerly a member of the South Carolina Medical Association; at one time a member of the house of representatives from Greenville County; died at his home, October 31.

Ralph E. Gustin, M.D., Detroit; Hahnemann Medical College, Chicago, 1881; aged 67; who was recently sentenced to imprisonment for one to fifteen years for performing an illegal operation; died in the hospital of the state penitentiary, Jackson, November 7.

Lieut. John Charles Murphy, M. R. C., U. S. Army, Hinesburg, Vt.; University of Vermont, Burlington, 1905; aged 35; formerly a member of the Vermont State Medical Society; died in Fort Ethan Allen, Vt., July 19, from purpura hemorrhagica.

Fielding Lewis Davis, M.D., Evansville, Ind.; Homeopathic Hospital College, Cleveland, 1870; aged 86; formerly a Fellow of the American Medical Association, and said to have been the oldest practitioner of Evansville; died at his home, November 1.

Homer Abraham Borin, M.D., Haw Knob, Tenn.; Lincoln Memorial University, Knoxville, Tenn., 1914; aged 33; physician for the Tellico River Lumber Company; was shot and instantly killed near Tellico Plains, November 4, by a young farmer.

George Murphy, M.D., Fort Wayne, Ind.; University of Wooster, Cleveland, 1870; aged 79; a veteran of the Civil War; formerly lecturer on chemistry and toxicology in the Fort Wayne Medical College; died at his home, November 3.

Basil M. Woolley, M.D., Atlanta, Ga.; Atlanta, Ga., Medical College, 1882; aged 82; a Confederate veteran; who was struck by an automobile, October 26; died from his injuries in the Davis-Fischer Sanitarium, Atlanta, November 28.

Arthur Martin Clapp, M.D., Springfield, Mass.; Harvard Medical School, 1902; aged 41; a Fellow of the American Medical Association; while testing a high-powered electrical coil in his office, October 31, was electrocuted.

William H. Webb, Adams, Ind. (license, Indiana, 1897); aged 91; a practitioner since 1866; and for fifty-six years of that time a resident of Adams; died at the home of his son at that place, November 8, from senile debility.

Mary J. Green, M.D., Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1878; aged 76; a member of the Medical Society of the State of Pennsylvania; died at her home in West Philadelphia, November 3.

Alvin H. Keller, M.D., Sioux Falls, S. D.; University of Nebraska, Lincoln, 1883; aged 64; a graduate of the Philadelphia College of Pharmacy, in 1886; died at his home, November 13, from chronic nephritis.

Jasper N. Tabler, M.D., Atlanta, Ga.; Medical College of Virginia, Richmond, 1869; aged 75; formerly a Fellow of the American Medical Association; died at the home of his daughter in Philadelphia, October 29.

Harry Lorenzo Chapin, M.D., Cleveland; Western Reserve University, Cleveland, 1893; was attacked by an unknown assailant in a hotel in Cleveland, November 8, and died shortly afterward from his injuries.

Carl Fulda, M.D., Brooklyn, N. Y.; College of Physicians and Surgeons in the City of New York, 1901; aged 38; attending surgeon to the German Hospital, Brooklyn, N. Y.; died at Pepperell, Mass., November 8.

James Taylor, M.D., East Liverpool, Ohio; Medico-Chirurgical College of Philadelphia, 1894; aged 46; first city clerk of Johnstown, Pa.; died at his home, November 6, from cerebral hemorrhage.

George W. N. Custis, M.D., Washington, D. C.; George Washington University, Washington, D. C., 1887; Hahnemann Medical College, Philadelphia, 1888; aged 87; died at his home, October 29.

Herschel J. Zeis, M.D., Kenton, Ohio; Starling Medical College, Columbus, Ohio, 1905; aged 36; a member of the Ohio State Medical Association; died at his home, October 31, from diabetes.

William Henry Spilman, M.D., Schoolfield, Ky.; Miami Medical College, Cincinnati, 1869; aged 77; died in the Campbell County Infirmary, Newport, Ky., October 8, from arteriosclerosis.

Charles Edward Stuart Taylor, M.D., Guthrie, Okla.; University of Toronto, Ont., 1874; aged 65; for nearly a quarter of a century a druggist of Guthrie; died at his home, November 1.

John Francis Mumford, M.D., Newtown, Conn.; College of Physicians and Surgeons, Baltimore, 1913; aged 26; died at the home of his parents in Raynham Center, Mass., about October 10.

Edward L. Stahl, M.D., Chicago; Rush Medical College, 1883; aged 64; also a graduate of the Chicago College of Pharmacy; died at his home, November 12, from cerebral hemorrhage.

Alexander T. Stevenson, M.D., Bay City, Mich.; Miami Medical College, Cincinnati, 1891; aged 56; died in Ann Arbor, Mich., July 13, from chronic interstitial nephritis.

Sloan F. Hall, M.D., Orlando, Fla.; University of Nashville, Tenn.; aged 84; for many years a practitioner of Nashville; died at his home, August 26, from uremia.

Oliver R. Diehl, M.D., Bryn Athyn, Pa.; Harvard Medical School, 1915; aged 27; died at his home, July 14, from endocarditis following a streptococcus infection.

Robert S. Stahle, M.D., New Market, Pa.; University of Maryland, Baltimore, 1882; aged 59; died at his home, November 2, from disease of the liver.

John H. Wade, Lesley, Ark. (license, Eclectic State Medical Board of Arkansas, 1903); aged 71; a Confederate veteran; died at his home, October 29.

George Wilbur Tucker, M.D., Wilmington, Ohio; Miami Medical College, Cincinnati, 1879; aged 66; died at his home, October 31, from arteriosclerosis.

John Wesley Story, Jr., M.D., Baker, Mont.; University of Louisville, Ky., 1912; aged 30; died in Miles City, Mont., November 5, from pneumonia.

Samuel H. Riley, M.D., Hudson, Mich.; Eclectic Medical Institute, Cincinnati, 1868; aged 72; died at his home, November 1, from pneumonia.

Thomas S. Motter, Dayton, Ind. (license, Indiana, 1897); aged 80; a surgeon of volunteers during the Civil War; died at his home, November 13.

Martha A. Stevens, M.D., Downers Grove, Ill.; New York Hygeio-Therapeutic College, New York, 1861; aged 82; died at her home, November 2.

Jack R. Sharman, M.D., Meridian, Miss.; Louisville, Ky., Medical College, 1876; aged 66; died at his home, September 4, from arteriosclerosis.

Edward H. Jones, M.D., Arlington, Texas; Tulane University, New Orleans, 1882; aged 61; died at his home, July 9, from bronchiectasis.

Wilson J. Orr, M.D., Springdale, Pa.; Jefferson Medical College, 1873; aged 85; died at his home, November 4, from senile debility.

Herman Meyer, Chicago (license, years of practice, Illinois, 1878); aged 69; died at his home, November 3, from strangulated hernia.

Benjamin F. Felix, M.D., Cerulean, Ky.; Eclectic Medical Institute, Cincinnati, 1886; aged 72; died at his home, October 25.

Edgar DeWitt Hurtt, M.D., Piscataway, Md.; University of Maryland, Baltimore, 1854; aged 87; died at his home, October 28.

Dudley W. Welch, M.D., Parkersburg, W. Va.; Medical College of Ohio, Cincinnati, 1896; aged 45; died at his home, October 30.

James Ward Vance, M.D., Madison, Wis.; Pulte Medical College, Cincinnati, 1881; aged 85; died at his home, October 31.

John H. Agee, Lafollette, Tenn. (license, Tennessee, 1889); aged 67; died at his home, August 17, from cerebral hemorrhage.

Martha J. Creighton, M.D., Chicago; Hahnemann Medical College, Chicago, 1884; aged 84; died at her home, November 14.

Adna Balche Jones, M.D., Wakeeney, Kan.; Rush Medical College, 1882; aged 60; died in Kansas City, Mo., October 27.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

NOSTRUMS IN RETROSPECT

A Review of Worthless or Unscientific Proprietary Mixtures Previously Criticized

[FOREWORD.—It is over twelve years since the Council on Pharmacy and Chemistry of the American Medical Association was created. Since then there have been but few issues of THE JOURNAL that have not called the attention of the medical profession to the debasing influence on scientific medicine of unscientific or worthless proprietary mixtures advertised to physicians for their use in prescribing. The Council on Pharmacy and Chemistry has investigated and shown many of these preparations to be fraudulent in one way or another, and these reports have been published in THE JOURNAL. In spite of this, these preparations have been advertised continuously to physicians, through medical journals and otherwise, and prescribed by a large number of physicians. One reason for this is that there are many physicians who have never seen these reports—who were not in active practice at the time, or who were not reading THE JOURNAL. We probably have among our readers at the present time 35,000 or 40,000 physicians who were not among the readers of THE JOURNAL twelve years ago. It is desirable, then, that we should take up, in more or less detail, several of the more widely advertised products that have been the subjects of previous reports. It has been repeatedly stated in THE JOURNAL that many of the proprietary mixtures—the so-called ethical proprietaries advertised to physicians—were no better and no worse than "patent medicines" advertised to the public.

Every physician who has the welfare of medicine at heart should put these questions squarely to himself if he has not already taken a firm stand on this whole problem: What is my attitude toward the work of the Council? Are its reports worthy of acceptance? Am I upholding the Council in its efforts to place therapeutics on a rational basis, not by blind faith alone, but by an honestly critical attitude toward it? Am I following the path of indolence by taking the advice of nostrum makers without any serious effort to determine whether they are true or false? In a word, am I really practicing medicine, or am I an unpaid agent and a dupe of nostrum makers? There are other revolutions than political. The public can be wronged just as certainly by the abuse of its confidence in clinicians as by the usurpers of political power, and when the public is thoroughly aroused the heavy hand of retribution is not likely to be too discriminating. That the sins of clinicians are standing out plain for any one who wishes to read is becoming more and more evident. There is but one short and ugly word that properly characterizes the physician who accepts a fee for prescribing that about which he has no more knowledge than has the one for whom he prescribes it. Are you with the nostrum makers or decent medicine?

The article below is the first of a series written for THE JOURNAL by one who is thoroughly conversant with the work of the Council on Pharmacy and Chemistry and can speak authoritatively on questions dealing with the action of drugs and the treatment of diseases. We believe that these articles will prove of interest and profit and that they will help physicians to answer the questions just propounded.]

[ARTICLE I]

BELL-ANS (PA-PAY-ANS BELL)

By S. Q. Lapius, M.D.

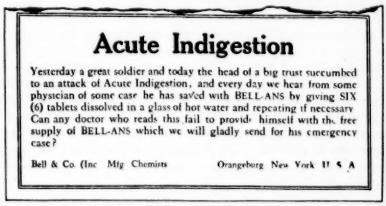
Bell-ans, for years advertised only in medical journals under the name "Pa-pay-ans (Bell)," is now advertised in newspapers as a remedy that "Absolutely Removes Indigestion." As it is still being advertised to physicians we propose to analyze the claims made for it with as much care as would be exercised in the discussion of the newest discovery in medicine, because we believe that it is desirable to show the trend of exploitation of a certain type of preparation in the medical press.

In the *New York Medical Journal* the following advertisement recently appeared on the front cover:

ACUTE INDIGESTION

Yesterday a great soldier and today the head of a big trust succumbed to an attack of Acute Indigestion; and every day we hear from some physician of some case he has saved with BELL-ANS by giving SIX (6) tablets dissolved in a glass of hot water and repeating if necessary. Can any doctor who reads this fail to provide himself with the free supply of BELL-ANS which we gladly send for his emergency case?

A recently purchased package of Bell-ans contained a circular in which it was stated that Bell-ans removes flatulence, vertigo, weakness and other symptoms of indigestion quickly and pleasantly; that it aids the digestion of food and tends to restore the digestive tract to a normal condition; that it relieves vomiting in pregnancy, alcoholism, seasickness and cholera morbus, besides being pleasant, harmless and effective for colic, sour stomach, feverishness, and wakefulness of infants and children. The circular contained paragraphs purporting to be taken from various medical journals, including the *New York Medical Journal*, *Wisconsin Medical Recorder*, the *Lancet Clinic*, *International Journal of Surgery*, and *Massachusetts Medical Journal*. No exact references were given to permit verification or to determine whether or not the quotations were from "reading notices" (advertisements) or from the scientific part of the journals in question. To quote one of the statements given:


Acute Indigestion
Yesterday a great soldier and today the head of a big trust succumbed to an attack of Acute Indigestion, and every day we hear from some physician of some case he has saved with BELL-ANS by giving SIX (6) tablets dissolved in a glass of hot water and repeating if necessary. Can any doctor who reads this fail to provide himself with the free supply of BELL-ANS which we will gladly send for his emergency case?
Bell & Co. (Inc Mfg Chemists
Orangeburg New York U S A

Typical of Bell-ans advertisements as appearing in medical journals.

"The results from the use of Bell-ans (Pa-Pay-ans Bell) in the treatment of indigestion are so prompt and so generally good—and the evidence of this fact is accumulating so rapidly and from such reliable sources—that we venture to suggest to our readers who have not tried this remedy that they prescribe one original sealed package of Bell-ans (Pa-pay-ans Bell) and that they carefully note the results from its use."

"We suggest an original sealed package because the preparation is widely and badly imitated, and unless such a package is specified an imitation of little value may be substituted and the experiment be thus rendered useless."

It is possible that Bell-ans has been imitated, but it is not true that it is widely imitated, for no such imitation has ever been called to our attention, and we strongly suspect that the main reason for desiring that an original package be dispensed is that the patient may see for himself the name BELL-ANS plainly blown in the glass.

The circular in question states that there is no derangement of the digestive organs on which the proper dose of Bell-ans will not act quickly and pleasantly! These are samples of the claims made for Bell-ans. Let us inquire into the nature of the conditions for which the preparation is recommended and the treatment advised by well known clinicians.

The subject of indigestion is discussed by Robert Hutchison and Robert Saundby under the general title of dyspepsia in the "Index of Treatment by Various Writers," Edition 6, 1912, pp. 260-265. Hutchison says: "In the first place it must be remembered that in many patients who complain of 'indigestion' the seat of the trouble is not in the stomach at all."

The general principles to be observed in the treatment of functional dyspepsia, as given by Hutchison, are: (1) To remove the cause; (2) to adapt the diet to the impaired functional power of the stomach; (3) to administer such drugs as are calculated to stimulate or correct the particular function or functions which happen to be impaired, or disordered. Proper diet, proper mastication of food, hygiene of

A Philadelphia Doctor writes:
"Your BELL-ANS for Indigestion do just what you claim and more, too. I, personally, had a bad case of intestinal indigestion with gastric vertigo. I had taken almost everything and got no relief, until I commenced to take BELL-ANS—four to six tablets in a large glassful of hot water after each meal. You have my permission to use this statement, with my name and address if you wish. I prescribe BELL-ANS constantly."
BELL-ANS
FOR INDIGESTION
25c package at every drug store in the U. S.

Newspaper advertisement of Bell-ans, capitalizing the statements of physicians.

the mouth, and constipation are enumerated as deserving attention. Careful attention to securing a proper diet is essential. The choice of drugs depends, of course, on the conditions that give rise to indigestion, and he calls attention to the necessity of avoiding all routine treatment and compiling one's prescription with an eye to the special disorder or disorders of function, whether secretory, motor or sensory, believed to be present. Hutchison gives the following typical prescriptions to illustrate the use of drugs in the different disorders of function:

FOR HYPERSECRETION (HYPERCHLORHYDRIA, ACID DYSPEPSIA, ETC.)

Sodium bromid	10 grains
Bismuth subcarbonate	15 grains
Chloroform water	½ ounce

This mixture to be taken before meals.

Sodium bicarbonate.
Bismuth subcarbonate.
Heavy magnesium carbonate, of each equal parts.

A small teaspoonful of the powder to be taken mixed with a little water or milk about two hours after meals.

FOR DEFICIENT SECRETION (HYPOCHYLIA, ACHYLIA, GASTRITIS, ETC.)

Sodium bicarbonate	10 grains
Tincture of nux vomica	10 minims
Spirit of chloroform	8 minims
Compound infusion of gentian	½ ounce

This mixture to be taken before meals.

Dilute hydrochloric acid and glycerin, of each 15 minims with enough water to make half an ounce, to be taken about twenty minutes after meals.

FOR DEFECTIVE MOTILITY (ATONIC DYSPEPSIA, GASTROPTOSIS, ETC.)

Hutchison recommends the use of 10 minims of tincture of nux vomica in an aromatic vehicle, such as infusion of quassia and compound tincture of cardamom; but another aromatic bitter, such as the compound tincture of gentian, will serve quite as well, of course. This is to be taken before each meal, and for the flatulence that often accompanies this trouble he gives menthol, aromatic spirit of ammonia and spirit of chloroform, as may be needed.

FOR ACID DYSPEPSIA

Robert Saundby recommends the following to be used before each meal for the relief of acid dyspepsia: sodium bicarbonate, bismuth subcarbonate, magnesium carbonate, of each 10 grains; mucilage of tragacanth 15 minims, and enough peppermint water to make an ounce.

These are only a few of the conditions that are discussed by Hutchison and Saundby, but they serve to show that the treatment of indigestion by a single prescription or combination is wholly irrational.

Bell-ans, both under its present name and under its older name, "Pa-pay-ans (Bell)," has always been alleged by its manufacturers to contain papain or to be a preparation of the digestive juice from the fruit of *Carica papaya* (papaw) with other substances. Various chemists have attempted to find papain present and to determine the digestive power of the tablets, but without success. For this reason THE JOURNAL suggested that the change of name from "Pa-pay-ans (Bell)" to "Bell-ans" was probably not made entirely for euphonious reasons, as alleged, especially when one considers that the name of a nostrum is its most valuable asset. It is much more likely that as analyses indicated there was not and probably never had been any papain present in the product, the name was changed for fear that some day the misleading term "Pa-pay-ans" might bring the preparation in conflict with the federal Food and Drugs Act.

Pa-pay-ans (Bell) was examined for the Council on Pharmacy and Chemistry in 1909 and the tablets were found to consist of charcoal, sodium bicarbonate, ginger, saccharin and oil of gaultheria. No digestive ferment could be detected in the tablets. Sodium bicarbonate is antacid and serves to dissolve mucus; ginger, if in sufficient amount, causes the expulsion of flatus, and charcoal, while an absorbent in the dry state, is probably useless for any therapeutic purpose whatever after it becomes saturated with gastric juice. Bell-ans, then, has all of the virtues, which are few, and all of the limitations, which are many, of a tablet of sodium bicarbonate and ginger. Its value in the treatment of acute indigestion would be limited to the value of a tablet of such a composition. It is absurd to suppose that it could have the slightest value in the far more serious conditions attended with intestinal indigestion, with the toxemia and autointoxication to which they give rise.

Bell-ans is now advertised directly to the public—but it is no less valuable on that account. True, it is a "patent medicine" in the commonly accepted sense of the term, but it is no more a "patent medicine" today than it was fifteen years ago when it reached the public, not through the direct medium of the newspapers but by the more indirect route of the medical journals and undiscriminating physicians. It is true that, in view of the serious nature of many conditions which are loosely spoken of by the public as "indigestion," its present method of exploitation is likely to make it just that much more dangerous because of the larger publicity that will be given. The point to be borne in mind is that

Typical of Bell-ans advertisements as appearing in newspapers.

Bell-ans is now in fact what it has always been in essence, a "patent medicine."

Again we ask the question: How do you wish to be classified, Doctor—among those who follow blindly the lead of a firm of nostrum makers, or among the intelligent members of the profession who study their cases carefully and prescribe intelligently? The manufacturers of Bell-ans claim that 100,000 American physicians now prescribe Bell-ans, and that 600,000,000 of the tablets are sold annually. If this is even approximately true it is a serious reflection on the medical profession, for the Council examined Bell-ans and reported its findings nearly eight years ago (THE JOURNAL A. M. A., Aug. 14, 1909), and the statements made in that report are as incontrovertible today as they were then.

Correspondence

DECENCY AND SAFETY AS PUBLIC HEALTH FACTORS

To the Editor:—Forcing the nation at large, by public health legislation, to adopt the idle fancies of the rich is advocated, at least by implication, in Dr. North's "Decency and Safety as Public Health Factors" (THE JOURNAL, Oct. 13, 1917, p. 1214). He proposes that "esthetic" requirements should be introduced into public health laws, and decries the "pragmatists" and "realists" who will not put into force any compulsory requirements beyond those definitely proved to be real requisites to safety. So direct a challenge to the best trend in modern public health thought certainly deserves a reply.

We are but struggling now from the slough of "esthetic" requirements, serving no useful purpose, which the old public health presented, and your author would have us return thereto. The amount of money spent in the past fifty years, even to this day, on "esthetic" measures would have placed us, had it been properly expended to diminish disease and death, fifty years in advance of where we are now. Nothing makes public health legislation more farcical, or gains for it more bitter and deserved opposition, than the belief, right or wrong, once established in the public mind, that the measures advocated are unnecessary, or based on a fad. Yet your author actually advocates fads as a useful guide to such legislation. The one great virtue of modern public health is that it goes to the nation for recognition and support on the real merits of its measures as proved life savers and life prolongers—that it disclaims all other objects, and refuses to be muddled with them; and this one great virtue he would have us lose!

Moreover, Dr. North misses the main point of estheticism, i. e., that it is a matter of taste and training. His crowning fallacy is that such happiness or enjoyment as "esthetics" gives can be compelled by legislation. All history shows that the mass of the world prefers liberty to the "enjoyment" he advocates. The war proves this in its every detail, if proof were needed. To legislate compulsory safety is the supreme duty of every government. To legislate compulsory happiness, which always means happiness of the brand enjoyed by the legislator who at the time is legislating, would be pure Prussianism—the essence of the evils which precipitated the war.

To make a legal requirement just, it must be applicable to all citizens equally. Hence, whatever advice may be given to the citizen, compulsion of the citizen can be justified only on incontrovertible evidence of its value to all, not to a few. Presenting to the ordinary citizen for his selection both silk and cotton underclothing, "esthetics" would I presume at once point to the former. Now suppose every citizen were compelled to buy the cotton. Would not that be an outrage, if he desired silk and had the price? How much more an outrage to compel the citizen to buy the silk, especially if he had not the price. Remember that 90 per cent. of our population are too poor to afford their children even a partial high school education. Remember that 95 per cent. of our population rank no higher in financial status than that of overseers or foremen of factories, and at least 90 per cent. rank below that financial status.

To examine Dr. North's own illustration of praiseworthy "esthetics" in public health, let us consider his "business man of New York" who demands a bottled spring water because of an "esthetic" dislike to the New York City supply on the ground that it has been polluted, although it is now made safe by artificial means.

Let us lay aside the point made by the Massachusetts State Board of Health that the bottled spring waters of that state were often far more impure than the city supplies. Let us ignore the fact that, this being true, such waters were bought on prejudice and ignorance and sold through reliance on false "esthetics," fostered by tradesmen for commercial purposes. Let us suppose that the particular spring water under consideration was, as Dr. North assumes, indeed "pure." Would he then compel the 90 per cent. of the population, unable to send their children to high school from sheer lack of cash, to buy this spring water because it was admired by the "esthetic" sense (?) of the business man, in preference to the wholesome if unsentimental water of New York City? After, mind you, that 90 per cent. have paid already for the wholesome water, in labor and in taxes? Reverse the compulsion and see what an outcry there would be among the business men if they were compelled to drink one water although ready and able to buy the other.

But do not the "esthetics" really run the other way? The spring water itself was without doubt polluted once, and, then (perhaps) was purified (uncertainly, if at all) by Nature's crude filtration. The esthetics that would prefer this (supposedly) more remote pollution, and the (presumably) sufficient purification following, to the definite and definitely known purification of a good city supply is an "esthetics" too tenuous for me to grasp.

Who shall decide what is "esthetics"? I have known people of culture and refinement to revolt shuddering at the cremation of the dead because it was "unesthetic." Is, then, the slow, slimy corruption of the loved one in a moldy grave the "esthetic" demand with which we must all comply? In this dilemma, which would Dr. North "compel" by legislation? I for one would never compel either against the absurdest sentiments of any one, because there is no more safety in the one than in the other; and if greater happiness or content is the portion of those whose loved ones are disposed of in this way or that, why tear such comfort from them, since both methods are harmless?

Again, are not the "esthetics" of pasteurized milk the other way about also? What kind of esthetics is that which revolts at raw meat but advocates raw milk? However, the whole point in pasteurizing milk is to make it safe for those who cannot pay, no matter how they may wish it, the 20 cents or more per quart necessary to insure a raw milk fit for use.

Too long has mankind fought, prisoned and burned his brother to force his own fancies as the brother's law. Though the proposition be made softly and under guise of such good words as "decency" and "purity" (just as those earlier propaganda were carried out under the guise of religion and of civilization), no follower of public health as it has evolved throughout the last quarter century can possibly endorse returning it to the pit from which it has been dug with so much sweat and labor. If we must have "esthetics," by all means have a board of esthetics to legislate it through, but do not burden public health with it, for public health has serious work to do and neither men nor time nor funds for fancies, usually foolish and often definitely harmful, if not in themselves, then in distracting attention, energy and enterprise from the things that really matter.

H. W. HILL, M.D., D.P.H., London, Canada.
Director, Institute of Public Health.

OINTMENTS OF IODIN

To the Editor:—A manufacturer of certain ointments of iodin brought to me a few months ago some of his preparations and asked me to have them chemically examined. This request was granted and the examinations were made by competent chemists who ascertained that the composition of the ointments was practically in agreement with the claims of the manufacturer.

There was no statement concerning the medicinal value of these ointments. The manufacturer has seen fit to use my report as an advertisement of the medicinal value of his preparations. I am willing to assist him in his endeavor and am ready freely to express my opinion concerning the value of these preparations.

In the first place, the preparations of this manufacturer are in no way superior to preparations which any competent registered pharmacist might make.

In the second place, in my opinion, ointments containing iodin have but little medicinal value. This is not a proper form in which to apply iodin in order to get its local action.

V. C. VAUGHAN, M.D., Ann Arbor, Mich.

REQUEST FOR REPRINTS ON CANCER

To the Editor:—Dr. Angelo Roffo, Saenz Pena 719, Buenos Aires, Argentina, is desirous of obtaining reprints of American literature dealing with experimental and clinical problems concerning cancer. Dr. Roffo is a member of the medical faculty of the University of Buenos Aires, the leader in that country in the study of cancer problems and the representative of the faculty in the new institute now being built for the experimental and clinical study of cancer. Dr. Roffo would appreciate receiving reprints from American writers interested in cancer, and not only would file this literature for the use of workers in the cancer laboratory and hospital but also would abstract it for the Argentine medical weeklies. I am sure he would appreciate any assistance our workers might give him in this connection.

RICHARD M. PEARCE, M.D., Philadelphia.

SIGNS OF FRENCH MAPS AND HIGHWAYS

To the Editor:—Some of the signs used on French maps are unfamiliar to Americans, even though accustomed to reading our own maps. Likewise the highways of France

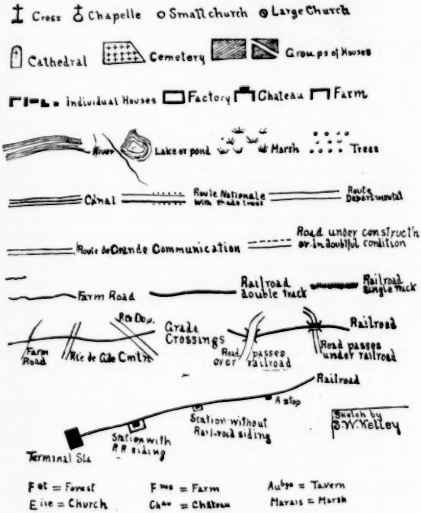


Fig. 1.—Markings and abbreviations in use on French maps.

have indexes and warnings, the meaning of which must be understood to be useful to the traveler. Many American officers and soldiers will be traveling in France in the near

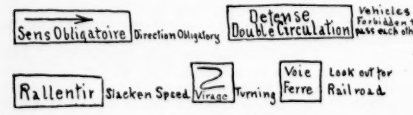


Fig. 2.—Road signs.

future, and in the hope of being useful to them I enclose sketches showing a few of the most ordinary abbreviations, markings and signs which I have found convenient to know in going about the country.

SAMUEL W. KELLEY, M.D., Cleveland.
Secteur Postal 205, France.
Chirurgien, Ambulance des Alliés.

BARBARITIES IN MEXICO

To the Editor:—An interesting side-light on the barbarities practiced by the soldiery of Zapata is shown by a patient who a short time ago entered the United States Marine Hospital here suffering from acute gonorrhea. On examination it was found that the penis had been amputated about one-half inch back of the corona. The patient stated that last year he was a soldier in the Carranzista army, and in a skirmish with some of Zapata's men he was captured and severely tortured. He was told that he was to be castrated and made to eat his testicles. They finally compromised by offering him death by hanging, with the alternative of having his penis amputated. He chose amputation. The penis was amputated with a saber. He was left to his fate, but happily was picked up by an ambulance driver, who stopped the flow of blood with a bandage.

The patient further stated that he knows of men who have had their ears, nose, tongue and penis amputated by Zapata's men and Villa's men, and portions of these parts forced down the victims' throats.

The stump had evidently received some surgical attention, as the skin of the shaft had been drawn over the raw surface, completely covering it. In the center of the stump was the small orifice of the urethra. The patient stated that erections are less frequent than before the amputation, and the sexual desire is less. He experiences, however, very little difficulty in performing coitus, and has ejaculations. On admission he had a very active acute gonorrhea with an epididymitis.

R. B. ACKER, M.D., New Orleans.
Assistant Surgeon, U. S. P. H. S.

THE HANDICAP OF PROPRIETORSHIP IN MEDICINE

To the Editor:—I am enclosing a reprint of my article on the "Present Status of Pituitary Extract in Labor," which appeared in THE JOURNAL, June 2, 1917, p. 1601, and also the September issue of Parke, Davis and Company's *Therapeutic Notes*, on page 89 of which they quote this article, that you may compare the two. The *Therapeutic Notes* article is ostensibly a copy, but as a matter of fact, it gives it only in part, which seems to me to be a gross misrepresentation, and one which I do not think should go unnoticed.

JOSEPH J. MUNDELL, M.D., Anacostia, D. C.

[COMMENT.—*Therapeutic Notes* is one of the house organs of Parke, Davis and Company. A part of each issue is usually devoted to "excerpts" from current literature. The *Therapeutic Notes* may be judged from the manner of "excerpting" the article of Dr. Mundell. Naturally the interest of Parke, Davis and Company is in those sections of the article which may be expected to promote the use of Parke, Davis and Company's proprietary preparation of pituitary extract—pituitrin. The following passages from the article of Dr. Mundell were not among those "excerpted" in *Therapeutic Notes:*

"Used here in properly selected cases, after due consideration by one who has good obstetric judgment, its results are usually happy, and it is a boon to the tired mother and her attendants."

"To step beyond these narrow confines of indications is indeed entering on dangerous territory. Especially is this true as regards the life of the baby. It is recommended in small doses by some good authorities and is frequently used in cases of slight contraction at the brim with sometimes very good results if the birth occurs within a few minutes, but frequently with disastrous results to the baby if delivery is delayed. In such cases, forceps are urgently indicated. Its use in such cases is risky beyond question. Pituitary extract is recommended in cases of postpartum hemorrhage, but ergot is undoubtedly to be preferred."

"All means should be exhausted to arrive at a definite diagnosis, and the dangers of its use should be fully appreciated and due consideration given before its administration in any case, for such a powerful drug, used indiscriminately, will surely produce sad results to mother or child or both."

"During the past two years a number of untoward effects and consequences of severe character have arisen. As far as the maternal accidents and complications are concerned, I firmly believe that were the slogan of the hour "safety first" borne in mind, a number of them could have been prevented, for beyond question this drug has been greatly abused, as it has been given in too large doses, in cases in which its use was strongly contraindicated, and often, I am sorry to say, for no reason other than the accoucheur's expediency. Its use has been reckless and careless. The many reports of its rapid and safe action

have been one of the greatest dangers. DeLee says, 'It provides for the physician and his brother gynecologist a lot of chronic sufferers, often incurable, even after mutilating operations.'"

"An analysis of the detailed reports of all these cases of ruptured uterus with one or two exceptions reveals the fact that pituitary extract was abused, being given to patients who should not have had it. To my mind, to give a dose of pituitary extract to a woman who has a contracted pelvis, mild or severe, when the head has not passed through the pelvis, is criminal and, if the obstetrician is not aware of the contraction, he is still little short of being a criminal."

In the latter part of his article in THE JOURNAL, Dr. Mundell analyzes the reports of twelve cases of rupture of the uterus, thirty-four cases of fetal deaths, and forty-one cases of asphyxia pallida in which "resuscitation was effected only after prolonged and vigorous efforts." These also were not excerpted.—ED.]

THE ETIOLOGY AND DEVELOPMENT OF NEPHRITIS

To the Editor:—My attention has been called to the fact that in my article on this subject (THE JOURNAL, Oct. 13, 1917, p. 1223), I overlooked important experimental work which was done by Prof. Oskar Klotz of Pittsburgh and published in the *Transactions* of the Association of American Physicians in 1914.

I regret this oversight because Professor Klotz' experiments were conducted in much the same way as our own, and because in some respects he seems to have had even more conclusive results than we obtained. Professor Klotz at that time (1914) already noticed the characteristic lesions in the glomeruli produced by intravenous injections of streptococci, and he seems to have been more successful than we in obtaining, in addition, characteristic lesions in the interstitial tissue.

I hope that you will publish this letter so as to give proper credit to Professor Klotz' work in this connection.

WILLIAM OPHÜLS, M.D., San Francisco.
Executive Head, Division of Pathology, Leland Stanford Junior University School of Medicine.

EXPEDIENT FOR RELIEVING SITUATION ARISING FROM SHORTENING OF INTERNSHIPS TO ONE YEAR

To the Editor:—At a conference of representatives of leading hospitals of this city, called recently by the Public Health Committee of the Academy of Medicine, it was ascertained that a number of hospitals, for the purpose of accommodating themselves to the program of the Medical Department of the Army, have, with some reluctance, shortened the period of their internships to one year.

All of those present at the conference agreed that an intern period of one year is insufficient for adequate clinical training.

I believe that the general adoption of an intern service of one year, especially at this time, when a large proportion of the members of visiting staffs of hospitals are being withdrawn for military service, thus increasing the responsibilities of interns, will seriously impair hospital efficiency and will react unfavorably on medical standards in the Army and in the community at large.

I quite appreciate the difficulty of relieving the situation through special legislation or by any radical change in the Surgeon-General's regulations, which now grant permission to commissioned interns to remain on the inactive list for the completion of one year of hospital service. However, a means is available of safeguarding the interests of hospitals, and indirectly of serving the public, without a radical change by, or serious embarrassment to, the Medical Department of the Army.

The expedient which I would suggest is the very simple and practical one of a change in the wording of the Surgeon-General's "Circular of Information on the Completion of Internships of Commissioned Officers" (Form 1-1), permitting the period of internship "so far as the Surgeon-General's Office is concerned" to terminate in December of the year following graduation, instead of in July of that year; permission to remain on the inactive list for the period named would, of course, be granted only "if the exigencies of the service permit."

S. S. GOLDWATER, M.D., New York.
Chairman, Committee on Hospital and Medical Facilities.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CATHETERIZATION OF INFANTS

To the Editor:—I was recently treating a child—a girl 1 year old—from whom I wished to obtain a sample of urine. I suggested using a catheter, but the parents had been told by a "children's specialist" that a catheter should never be used on an infant; that it was an extremely dangerous procedure and apt to cause inflammation of the bladder from which the child would never recover. Later I heard from the mother, who had taken the baby to a children's hospital, that the house physician had told her that he had never catheterized a baby and never would. I looked the matter up in several books and have asked a number of physicians their opinion; but so far I have not been able to get any satisfactory information. I do not see why using a catheter on an infant should be an operation attended with any particular danger if aseptic precautions are taken. If it is dangerous, I am unable to understand why it is not so mentioned in our textbooks. I shall appreciate an answer to this question or an opinion from you on the subject. If it is not a rational procedure to catheterize a child, I believe you will be doing a service to many members of our profession by publishing this letter and your answer. If you do this, please omit my name and address. W. C. J.

ANSWER.—There is no reason to believe that catheterization of female infants is any more dangerous than the catheterization of older persons. Not only is the procedure a permissible one, but it is highly advisable when there is difficulty in obtaining urine, and especially in cases in which pyelocystitis is suspected. The procedure is absolutely necessary, if one wishes to find out the nature of the infecting organism in a case of pyelocystitis, which must be done if we are to treat the patient intelligently. It should be stated here that pyelocystitis is a frequent infection in children, and would be diagnosed often if catheterization were done in cases in which the cause of the rise of temperature is in doubt.

SALVARSAN

To the Editor:—At a recent meeting of a clinical club in this city, the fact developed that men thoroughly conversant with the use of arsenical preparations (salvarsan, etc.) could give us no definite information as to which of the American and Canadian products now on the market are most reliable both as to therapeutic results and absence of toxicity.

It seems well that a statement on this matter should be made by the Council on Pharmacy and Chemistry if it is possessed of that information; and if not, that it should at once take steps to come to a decision and relieve the profession of the uncertainty of the situation.

I shall be pleased if it is possible for you to give me an answer as to which preparation I ought to use.

J. E. TUCKERMAN, M.D., Cleveland.

ANSWER.—In addition to the German made salvarsan and neosalvarsan, now practically off the market, the Council on Pharmacy and Chemistry has admitted to New and Nonofficial Remedies diarsenol, manufactured by the Synthetic Drug Company of Toronto, Canada, and arsenobenzol made by the Dermatological Research Laboratories, as products essentially the equal of salvarsan. It has also accepted neodiarsenol, manufactured by the Synthetic Drug Company, as essentially equivalent to neosalvarsan. The Council has under consideration at the present time salvarsan manufactured by the Farbwerke-Hoechst Company, New York.

Before accepting these preparations, the Council required evidence to show that the products are manufactured under supervision which may be expected to insure its chemical identity and uniformity and its freedom from toxicity. It should be remembered, however, that, in the past untoward effects have been reported from German salvarsan and neosalvarsan possibly due to idiosyncrasy, but more probably to

the fact that certain lots (probably through some faulty technic in the manufacture) were more toxic than others. This has been the case particularly in regard to the last shipments of neosalvarsan from Germany. Recently some untoward effects from neodiarsenol have also been reported. No conclusive evidence is available, we believe, that shows difference in the toxicity or therapeutic efficacy between the German made salvarsan, diarsenol or arsenobenzol (Dermatological Research Laboratories); though reports have been received that the last product, while somewhat less soluble than salvarsan, is more nearly free from toxic action than salvarsan.

We are informed that within a short time all salvarsan, neosalvarsan and the various products identical with these will be tested by the government before their sale is permitted. This control is to be established by the Federal Trade Commission under the authority of the recently passed "Trading with the Enemy Act." This act, among other things, provides for the manufacture of synthetics covered by German patents under licenses issued by the Federal Trade Commission. Such licenses, we are informed, will provide for government control of each lot manufactured, and may also stipulate the maximum selling price.

DEATH RATE FROM TUBERCULOSIS—DISEASES WITH GREATEST MORTALITY

To the Editor:—1. How many people die annually of tuberculosis in the United States? 2. What is the percentage per thousand? 3. What is the average age of those who die of this disease? 4. In their order of mortality, what diseases occupy first, second, third, fourth and fifth places?

J. E. Brinkman, M.D., Waterloo, Iowa.

Answer.—1. According to the mortality statistics of the Department of the Bureau of the Census for 1915, tuberculosis of different parts of the body caused 98,194 deaths during 1915, which is 10.8 per cent. of the mortality charged to all causes for that year.

2. All forms, 145.8 per hundred thousand; tuberculosis of the lungs, 127.7 per hundred thousand.

3. The average age of those who die of pulmonary tuberculosis is about 35 years.

4. The death rate during 1915 per hundred thousand population was as follows:

Organic heart diseases	156.2
Tuberculosis (all forms)	145.8
Pneumonia (all forms)	132.7
Nephritis	104.7
Cancer	81.1
Cerebral hemorrhage	79.3

SOLDIERS' AND SAILORS' INSURANCE LAW

To the Editor:—I notice an editorial in The Journal of November 17 about the Soldiers' Insurance Law. This article states that the insurance should be applied for within 120 days. As I am on the reserve list, I would like to know whether this means 120 days after receipt of commission, or after receiving orders for duty. Please give me information about this law, or tell me where to find such information.

Milton J. Stern, M.D., Paris, Ky.

Answer.—Members of the Medical Reserve Corps not on active duty are not entitled to insurance either under the automatic provisions of the law or on application. The language of the Act (Sec. 401) relating to the time for applying for the insurance is: "Such insurance must be applied for within 120 days after enlistment or after entrance into or employment in the *active service* and before discharging or resignation, except that those persons who are in the active war service at the time of the application (Oct. 15, 1917) of the terms and conditions of such contract of insurance may apply at any time within 120 days thereafter and while in such service."

Medicine in Recent Fiction.—Voivenel remarks in a recent issue of *Progrès Médical* that medicine, and especially objective psychology, seems to be regarded by the writers of the day as worth flirting with. But our science is a princess who has more malice and wit than she seems to have. She likes to render ridiculous those who would flirt with her. But she is gracious to the writers who take the pains to deal seriously with her.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Colorado: Denver, Jan. 8. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Delaware: Wilmington, Dec. 11-13. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

District of Columbia: Washington, Jan. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Florida: Jacksonville, Dec. 4-5. Sec., Dr. W. M. Rowlett, Citizens Bank Bldg., Tampa.

Hawaii: Honolulu, Jan. 10-13. Sec., Dr. G. A. Batten, Box 375, Honolulu.

Indiana: Indianapolis, Jan. 8-10. Sec., Dr. Wm. T. Gott, 84 State House, Indianapolis.

Kentucky: Louisville, Dec. 4-6. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, Dec. 6-8. Sec. Pro-tem., Dr. E. W. Mahler, 730 Audubon Bldg., New Orleans.

Maryland: Baltimore, Dec. 11. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

Minnesota: St. Paul, Jan. 2-4. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.

Missouri: St. Louis, Dec. 17-19. Sec., Dr. George H. Jones, 206 Washington St., Jefferson City.

National Board of Medical Examiners: New York City, Jan. 9-17. Sec., Dr. J. S. Rodman, 310 Real Estate Bldg., Broad and Chestnut Sts., Philadelphia.

New Hampshire: Concord, Dec. 10-12. Sec., Dr. W. T. Crosby, Beacon Bldg., Manchester.

North Dakota: Grand Forks, Jan. 1. Sec., Dr. G. M. Williamson, Grand Forks.

Ohio: Columbus, Dec. 4-6. Sec. Pro-tem., Dr. Herbert M. Platter, 185 E. State St., Columbus.

Oklahoma: Oklahoma City, Jan. 8-9. Sec., Dr. J. J. Williams, Weatherford.

Oregon: Portland, Jan. 1. Sec., Dr. Herbert S. Nichols, Portland.

Pennsylvania: Philadelphia, Jan. 8-10. Sec., Nathan C. Schaeffer, State Capitol, Harrisburg.

Rhode Island: Providence, Jan. 3. Sec., Dr. B. U. Richards, State House, Providence.

South Dakota: Pierre, Jan. 8. Sec., Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 7-8. Cor. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Virginia: Richmond, Dec. 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.

Washington: Spokane, Jan. 1. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

Colorado January Examination

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the written examination held at Denver, Jan. 2, 1917. The examination covered 8 subjects and included 80 questions. The percentage required to pass was 75. Nine candidates were examined, of whom 8 passed and 1 failed. One hundred and fifteen candidates were licensed through reciprocity, including 99 osteopaths. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
University of Colorado	(1915)	77.3
Chicago College of Medicine and Surgery	(1916)	89.3
Hering Medical College	(1895)	80
Harvard University	(1914)	84.4
Jefferson Medical College of Philadelphia	(1910)	81.2
Lincoln Memorial University	(1915)	78.2
Baylor University	(1913)	86.5
University of Toronto	(1907)	85
FAILED		
St. Louis College of Physicians and Surgeons	(1915)	70

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Arkansas Industrial University	(1886)	Arkansas
Atlanta College of Physicians and Surgeons	(1910)	Georgia
Hahnemann Med. College and Hospital of Chicago	(1884)	Penna.
Illinois Medical College	(1905)	Illinois
Northwestern University	(1910)	Illinois
State University of Iowa College of Medicine	(1902)	Iowa
University of Louisville	(1911)	Illinois
Medical School of Maine	(1910)	Maine
University of Maryland	(1912)	Maryland
Barnes Medical College	(1901)	Missouri
Marion-Sims College of Medicine	(1893) (1899)	Missouri
Albany Medical College	(1901)	New York
Meharry Medical College	(1905)	Alabama
Vanderbilt University	(1912)	Tennessee
Memphis Hospital Medical College	(1886)*	Arkansas

*Official information on file indicates that this candidate is not a graduate of the medical school named.

Missouri June Examination

Dr. George H. Jones, secretary of the Missouri State Board of Health, reports the written examination held at St. Louis, June 18-20, 1917. The examination covered 14 subjects and

included 100 questions. An average of 75 per cent. was required to pass. Of the 117 candidates examined, 113 passed and 4 failed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1916)	82.3
University of Illinois		(1916)	87.4
University of Louisville		(1917)	86.9
Johns Hopkins University		(1906)	75
Harvard University		(1917)	87.1, 89.1, 90.6
Barnes Medical College		(1907)	75
National University of Arts and Sciences (1915) 82.1; (1916) 85.3; (1917) 75, 75.2, 79.1, 79.6, 79.7, 80.1, 81.1, 81.4, 81.8, 82, 82.1, 82.1, 82.1, 82.5, 82.5, 82.8, 82.9, 83, 83, 83.4, 83.9, 84.2, 84.3, 84.4, 85, 85.1, 85.7, 86.1, 86.1, 86.5, 86.8, 87.4, 87.6, 88, 89.1, 89.2.			78.8
St. Louis College of Physicians and Surgs. (1913) 81.3; (1915) (1917) 82.4, 85.1, 85.4, 87.2.			80.1
St. Louis University (1917) 80.1, 83.2, 83.4, 83.8, 83.9, 85, 85.1, 85.4, 86.2, 87, 87.1, 87.1, 87.3, 87.4, 87.4, 87.9, 88.1, 88.1, 88.1, 88.1, 88.1, 88.3, 88.4, 88.4, 88.5, 88.7, 88.7, 89, 89.1, 89.1, 89.1, 89.1, 89.1, 92.7.			
Washington University (1916) 88.8; (1917) 83.1, 85.1, 85.5, 86.1, 86.1, 86.1, 86.7, 86.8, 87.1, 87.7, 88.1, 88.1, 88.1, 88.1, 88.2, 88.3, 90.1, 90.1.			
John A. Creighton Medical College		(1915)	88.1
Jefferson Medical College of Philadelphia		(1915)	89.8
University of Pennsylvania		(1917)	83.1
Meharry Medical College		(1916) 75, 76.1; (1917)	83.2, 84.2
	FAILED		
St. Louis College of Physicians and Surgeons		(1910)	72.4
Meharry Medical College		(1916) 75, 76.1; (1917)	83.2, 84.2
University of West Tennessee		(1915)	56.1, 72.1

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College		(1913)	Nebraska
Jenner Medical College		(1914)	Illinois
Northwestern University		(1891)	Iowa
Rush Medical College		(1913)	Illinois
University of Michigan Medical School		(1913)	Michigan
Barnes Medical College		(1908)	Nebraska
St. Louis College of Physicians and Surgeons		(1909)	Penna.
		(1914)	Texas
Omaha University		(1895)	Kansas
Meharry Medical College		(1915)	Tennessee
University of West Tennessee		(1913)	Maine

Maryland June Examination

Dr. McP. Scott, secretary of the Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, June 19, 1917. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 67 candidates examined, 59 passed and 8 failed. Twelve candidates were licensed through reciprocity, and 1 candidate was granted a reregistration certificate. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University		(1917)	84
John Hopkins University (1916) 78, 79, 81, 83, 84, 91; (1917) 75, 75, 77, 77, 78, 79, 79, 80, 80, 81, 81, 82, 82, 83, 83, 85, 85, 85, 86, 86, 87, 87, 87, 87, 90, 91.			
University of Maryland (1903) 81; (1915) 78; (1916) 75, 76, 78, 78, 79, 80, 87; (1917) 75, 76, 76, 78, 78, 79, 80, 82, 83, 87, 90.			
Jefferson Medical College of Philadelphia (1916) 85; (1917)			79, 83
Meharry Medical College		(1916)	78
Medical College of Virginia		(1917)	75
	FAILED		
Bennett Medical College		(1914)	*
College of Physicians and Surgeons, Baltimore		(1915)	*
Johns Hopkins		(1915)	72
Maryland Medical College		(1904)* (1913)	*
University of Maryland		(1916)* (1917)	67, 68

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
George Washington University		(1915)	Louisiana
Louisville Medical College		(1894)	W. Virginia
Maryland Medical College		(1908) (1913)	Penna.
University of Maryland		(1882) (1912)	S. Carolina
Harvard University		(1916)	N. B. M. Ex.
Albany Medical College		(1897)	Delaware
Western Reserve University		(1887)	Ohio
Hahnemann Med. Coll. and Hospital of Philadelphia		(1904)	Penna.
Jefferson Medical College of Philadelphia		(1916)	Michigan
Medical College of Virginia		(1895)	Virginia

* No grade given.

Hawaii September Examination

Dr. R. W. Benz, chairman of the Hawaii Board of Medical Examiners, reports that three candidates were licensed at the examination held at Honolulu, Sept. 10-13, 1917. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Examined
College of Physicians and Surgeons, San Francisco		(1917)	1
Leland Stanford Junior University		(1917)	2

Book Notices

THE SECRETION OF THE URINE. By Arthur R. Cushny, M.A., M.D., LL.D., Professor of Pharmacology, University of London, University College. Cloth. Price, $3 net. Pp. 241, with 36 illustrations. New York: Longmans, Green & Co., 1917.

This presents a critical digest of the entire literature on normal kidney function. The author states that he did not feel able "to adventure on the difficult subject of renal pathology." Hence at the end of the volume only three short chapters are devoted to glycosuria, albuminuria and nephritis. This is to be regretted, since the author's able exposition of normal kidney function would have served as a valuable norm for the interpretation of renal diseases. In the preface, Cushny registers a severe indictment of present day investigators of kidney function. "The growth in the literature on the kidney has been most extraordinary, and this increase in bulk has not gone along with an improvement in quality, but rather the reverse. No other organ of the body has suffered so much from poor work as the kidney, and in no other region of physiology does so much base coin pass as legal tender." This stricture is essentially just, and applies with equal force to the physiologist, the pharmacologist, the pathologist and the clinician. This monograph will help to speed the advent of a new day of greater accuracy and more severe critique in medical research. The book is a useful and opportune contribution to physiology and medicine.

SHELL SHOCK AND ITS LESSONS. By G. Elliot Smith, M.A., M.D., F.R.C.P., Dean of the Faculty of Medicine, University of Manchester, and T. H. Pear, B.Sc., Lecturer in Experimental Psychology, University of Manchester. Cloth. Price, $1 net. Pp. 135. New York: Longmans, Green & Co., 1917.

This is a remarkably fine and most timely little book. Abroad our colleagues are constantly seeing examples of shell shock, and unless present signs fail, many of our medical men, military and civil, are going to see the same thing. A more succinct and reasonable treatment of the subject can scarcely be imagined. Chapters IV and V are devoted to a spirited criticism of the British attitude on insanity and the insane, on neuroses and the neuropaths, are not particularly germane to the title of the book, and are less applicable, we hope, to the United States than to England. But the preceding chapters on shell shock are wholly admirable. Any physician expecting to see such cases should be compelled to read these chapters with care. Before the patient can be shown that he has not a mysterious, unheard of, horrible malady, the physician must be as familiar with this disorder as he is with typhoid. Before the physician can really reach an apparently inaccessible patient, in all reason he should know the reasons of his apparent inaccessibility and the principles of approach. For the attainment of this intimate acquaintance and clarity of vision, the brochure in hand will be of inestimable value. Careful perusal of the three chapters leads one to at least two definite conclusions: Shell shock has brought us no new symptoms. These patients should be handled by experts: by men equipped with the necessary brains, training, experience and proper hospital facilities.

AN EPITOME OF MENTAL DISORDERS. A Practical Guide to Aetiology, Diagnosis and Treatment for Practitioners, Asylum, and R. A. M. C. Medical Officers. By E. Fryer Ballard, M.B., B.S., Captain R. A. M. C. (T.). Cloth. Price, $2.25 net. Pp. 211. Philadelphia: P. Blakiston's Son & Co., 1917.

When a person in a foreign country knows nothing of the language, the little books of current phrases in parallel columns are very useful. Being perhaps lost in a tangle of streets, he looks up the equivalent of "Will you kindly direct me to the Grand Hotel?" and has a fair chance of reaching his hostelry. To be sure, he may first find himself at the Grand Central Station, and then maybe at the Grand Emporium of Novelties; but he neither feels nor is so helpless as he would be without his handy volume. Captain Ballard's epitome may be compared with such a little handbook. But we hasten to add that the very first line of the preface states that "this little book is not intended for students of medicine,"

and the third line informs us that the author "has not aspired to write a textbook of psychiatry." For the kind of book that it does aspire to be, it is excellent. We know of no work that could be so quickly and truly useful to "practitioners" and "assistant medical officers in asylums" ignorant of psychiatry, incompetent to make an accurate diagnosis in mental disorders and to treat the insane. We do not doubt that such a book is needed, will be used, and will be a real help not only in the United Kingdom but also in the United States. That this is true is pathetic. It means that the insane and mentally unbalanced are not getting the service they should have. We should also commend the book to the host of new medical men in the army who, if they see service, are sure to see mental cases with which they are entirely unfamiliar and yet concerning which they will have to make some decision. In this connection we should add that the chapter on shell shock is vague in statement and entirely inadequate: not to be compared with the handling of the subject in the little book of Smith and Pear.

THE AMERICAN ENCYCLOPEDIA AND DICTIONARY OF OPHTHALMOLOGY. Edited by Casey A. Wood, M.D., C.M., D.C.L., Professor of Ophthalmology and Head of Department, College of Medicine, University of Illinois. Volume 11. Muscles, Ocular to Ophthalmology, History of. Cloth. Price, $6. Chicago: Cleveland Press, 1917.

The first third of the present volume is occupied by the continuation of the article on the ocular muscles, and the latter half by an instructive history of ophthalmology from the earliest times, including a brief account of ophthalmologic associations in America and American ophthalmologic journals. Concerning the character of this great work, it is believed that a judicious and courageous employment of the editorial blue pencil would have improved the historical article. The objection is not to the matter, but to the method of treatment. Other important topics in the volume are myopia, neosalvarsan, nephritis and eye symptoms, neurology of the eye, nystagmus, oblique astigmatism, and ophthalmia neonatorum (not fully treated here). The illustrations are abundant, as usual, and those of the historical article important to have preserved in a work of this sort.

A TEXT-BOOK OF FIRST AID AND EMERGENCY TREATMENT. By A. C. Burnham, M.D., Medical Reserve Corps, U. S. Army, Instructor in Surgery in the Polyclinic Hospital, New York City. Cloth. Price, $2. Pp. 307, with 162 illustrations. Philadelphia: Lea & Febiger, 1917.

In this book, first aid methods are concisely and practically treated in a manner well within the comprehension of such groups as boy scout and Red Cross classes, factory foremen, first aid industrial teams, or the troops of the Sanitary Corps. The illustrations are well chosen. Every topic in the brief preliminary chapter on anatomy closes with a practical reference to first aid surgical considerations. The chapter on transportation of the injured, an adaptation of the regulations of the Sanitary Corps of the United States Army, is especially lucid and concise. The work includes a description of first aid treatment of the sick as well as of the injured. The recently perfected mechanical respirators are discussed. This small book is noteworthy throughout for the absence of anything not germane to its purpose of a clear description of first aid methods.

SANITATION FOR MEDICAL OFFICERS. By Edward B. Vedder, M.D., Lieutenant-Colonel, U. S. Army. Medical War Manual No. 1, Authorized by the Secretary of War and Under the Supervision of the Surgeon-General and the Council of National Defense. Leather. Price, $1.50. Pp. 211, with 24 illustrations. Philadelphia: Lea & Febiger, 1917.

This is one of the manuals authorized by the Secretary of War, and published under the supervision of the Surgeon-General. It is issued as a guide for medical officers in the control of sanitary work. The author claims no originality for the material presented, much of which is compiled from other books on military hygiene and sanitation. Such Army orders as are of special value to medical officers are quoted, and others are mentioned by number so as to enable ready reference by those wishing to go into any subject in greater detail. The volume is interleaved with blank pages for making notes. It is a practical handbook for the purpose for which it was prepared.

Medicolegal

Duty and Liability of Owner or Operator of Sanatorium

(Robertson vs. Charles B. Towns Hospital et al. (N. Y.), 165 N. Y. Supp. 17)

The Supreme Court of New York, Appellate Division, Second Department, says that it is the duty of the owner of a sanatorium conducted for private gain to use reasonable care and diligence, not only in treating, but also in safeguarding, a patient, measured by the capacity of the patient to provide for his own safety. In the discharge of this duty, physicians and nurses possessing that reasonable degree of learning and skill that is ordinarily possessed by persons similarly engaged must be employed, and they must act with reasonable care and diligence. In this case, a patient, who had been advised to go to a sanatorium for treatment for alcoholism, was assigned to a room on the third floor, the one window in which room was guarded with a metallic grating. A few days later a physician and a nurse attached to the hospital found him in the room with an uplifted pitcher in his hand, after he had driven forth his roommate, whom he falsely charged with an attempt to kill him. The physician's attention was attracted to the incident by having heard a sound like "rattling the screen"; that is, the metallic grating on the window. The patient, being persuasively subdued and his fear apparently dispelled, then started for the lavatory, and the female nurse asked the physician to accompany him. The physician was about to do so instantly when he heard a crash. He rushed in. He saw the body of the patient falling through the window, which was of ground opaque glass and was not guarded. He grabbed him, but could not hold him, and he fell to the ground, where he died a few minutes afterward from the injury thus caused. The case was barren of evidence that conscious suicide should have been foreseen. There was, however, evidence that the patient had a delusion that his roommate had a design to kill him, and it was inferable that he shook the window screen in his bedroom in an attempt to escape from his imaginary assailant. There was also evidence that he had alcoholic delusions, and that fear of bodily harm and an impulse to escape an imaginary foe are characteristics of these delusions; and evidence that the delusion may manifest itself, disappear and shortly recur. The court thinks the evidence recited presented a question for the jury as to whether the physician or the nurse should not, in the exercise of the requisite skill and care, have foreseen such a casualty and protected the patient from the unguarded window in the bathroom. But the court holds that a judgment against the hospital and Charles B. Towns, for damages, must be reversed, because, while there was evidence on which the jury might have found either liable, there was no evidence on which they could be held jointly. The physicians and the nurse were not the servants of both. The jury did not decide who was the master. The corporation operated the hospital, or it did not. If it did, it could be liable; if it did not, and the individual defendant was the actual operator and master, why should there be a judgment against it?

Refusing to Submit to Reasonable Treatment —Results as Evidence

(Peterson vs. Branton (Minn.), 162 N. W. R. 895)

The Supreme Court of Minnesota holds, in this action to recover damages for alleged negligent and unskilful treatment of a fracture, that, when a patient refuses to submit to the reasonable treatment prescribed by a surgeon, from that time on the fault is with the patient, and not with the surgeon. And when a patient refuses to submit to the reasonable treatment prescribed by his surgeon, the surgeon may give in evidence his opinion of what the result would have been had the treatment that he prescribed been followed. It is also recalled that this court has held that, in an action against a physician to recover damages for negligent or unskilful treat-

ment of a patient, the result alone is not evidence of negligence; but an expert witness may give his opinion, based on the result, that the treatment must have been improper, and such an opinion is evidence on which the court or jury may find negligence.

The court says that the plaintiff, a man 49 years old, Oct. 25, 1914, sustained a fracture of both bones of the right forearm between 3 and 4 inches from the wrist. The defendant, after describing his treatment, testified that the plaintiff continued to come to his office in the hospital until some time in March, 1915; that up to the time he examined the arm, December 29, it was straight and the bones in perfect alinement; but that when he examined the arm in March he found there was a nonunion of the radius, and the ulna was crooked; that he then informed the plaintiff of the condition and advised him that further methods were necessary, and that he would have to give him another anesthetic and treat the ununited ends of the ulna so that they would unite; and that the plaintiff refused to submit to such treatment. At this stage of the trial the defendant was asked whether, in his judgment, a good arm would have resulted, if the plaintiff had followed his advice. To this an objection was sustained; but the supreme court holds that the testimony sought to be elicited was admissible under the pleadings, and that to exclude it was error.

This was not a personal injury case in which the wrongdoer claimed that the injured party could have reduced his damages by an operation to which he refused to submit. In such a case the injured party is not required to submit to an operation for the benefit of the person who caused the injury. But in this case the defendant contended throughout the trial that the condition of the arm was due to no fault of his. That he properly reduced the fracture in the first instance was conceded by the plaintiff's expert witnesses. The defendant claimed that the failure of union was due either to some act of the plaintiff, or to some cause for which neither party was responsible, a situation which the testimony showed is not unusual in cases of this character. If the defendant's claim of freedom from fault was well founded, a question he had a right to have submitted to the jury, it was his duty, on discovery of the nonunion, to advise the plaintiff of the necessary and proper treatment to be thereafter pursued. Proper advice is part of proper treatment, and if from that time on there was fault in any one, it lay with the plaintiff, and not with the defendant. It was defensive matter going directly to disprove the charge in the complaint, and not in mitigation of damages or to establish contributory negligence. The defendant claimed that in this respect as well as in all others he performed his whole duty toward the plaintiff; and in connection with his advice he had a right to state to the jury his opinion as to the result of the treatment he prescribed had it been followed.

The jury returned a verdict for $4,500 for the plaintiff, from which the trial judge required him to remit $1,500, or to have a new trial granted to the defendant; but, on account of the error in the exclusion of the testimony sought to be elicited by the question to which objection was sustained, the supreme court holds that a new trial should be granted, and reverses the order denying the defendant's motion for one.

Information Derived from and in Presence of Third Persons

(North American Union vs. Oleske (Ind.), 116 N. E. R. 68)

The Appellate Court of Indiana, Division No. 2, says, in this action brought by plaintiff Oleske to recover on a beneficiary certificate for the death of her husband, that the insured on the morning of the day on which he died was suddenly stricken with severe illness, the nature of the ailment being in controversy. The insured was unconscious, and remained in that condition until he died. The plaintiff, discovering his condition, sent for certain neighboring women, and also called a physician. At the trial, the defendant offered to prove by the physician some statement made by the plaintiff to him in the presence of such neighbors and relative to the insured's condition. The statement, if made at all, was made while the physician, assisted by the neighbors and by the plaintiff, was examining the insured with a view to treatment, the insured being at that time unconscious. The testimony was excluded as privileged, which the court holds as right. The insured, being unconscious, was unable to give to the physician any account of the cause, origin, or history of his ailment. It was necessary that such service be performed by another, if at all, and it would seem that the wife should be considered a proper person to give such information. Where the intervention of a third person is necessary in order that the patient may communicate with the physician with a view to intelligent treatment, neither the physicians nor such third person may disclose, over objection, information so communicated. To information obtained by a physician while treating his patient, the privilege may attach, notwithstanding the presence of third persons in the sickroom, where the consultation is held. It is held, however, that disinterested persons present when a patient communicates with his physician relative to the ailments of the former may testify to such communications. The privilege extends not only to communications from the patient to the physician, but to information derived by the physician from persons present at the interview. It is true that the weight which should otherwise be assigned to the New York decisions is detracted from somewhat by the fact that the governing statute of that state is not identical with the Indiana statute. Nevertheless, the court regards the situation presented here as arousing the spirit of the Indiana statute, and as a consequence that the evidence sought by the testimony of the physician was privileged and properly excluded.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Minneapolis, Dec. 27-29.
American Physiological Society, Minneapolis, Dec. 27-29.
Porto Rico Medical Association, San Juan, Dec. 22-23.
Society of American Bacteriologists, Washington, D. C., Dec. 27-29.
Southern Minnesota Medical Association, Mankato, Nov. 26-27.
Western Surgical Association, Omaha, Dec. 14-15.

MINNESOTA STATE MEDICAL ASSOCIATION

Annual Meeting, held at St. Paul, Oct. 11-12, 1917

The President, DR. HARPER M. WORKMAN, Tracy, in the Chair

Tumors of the Bladder and Their Nonoperative Treatment

DR. W. F. BRAASCH, Rochester: In summarizing our experiences with the nonoperative treatment of tumors of the bladder, it may be said: 1. In cases of primary tumor, fulguration is applicable only to the papillomatous tumors of a relatively benign type. 2. Although the ultimate results following fulguration are much superior to those following suprapubic resection, the method does not always offer a permanent cure. 3. Recurrence most often takes place within a year following fulguration, and is usually at the site of the primary tumor. 4. Multiple recurrence is more often observed with multiple primary tumors. 5. The interval of recurrence and the evident degree of malignancy are lessened by repeated fulguration.

Cesarean Section

DR. H. T. MCGUIGAN, Red Wing: We have had no maternal mortality in our series, and only one infant mortality, which occurred one week after delivery, from causes in no way incident to the operation. These uniformly good results can be ascribed in a large measure to the fact of having the patients in the hospital and directly under control. unnecessary examinations were not made and the patients were operated on before they had become physically exhausted from long labor pains. It appears to us after our experience with the operation that it is advisable to employ it in many more cases than it is at present. One cannot help being convinced of this by watching a convalescence from a high forceps operation and a cesarean section.

DISCUSSION

DR. H. B. SWEETSER, Minneapolis: In the case of a primipara, with an undilated os, with convulsions, cesarean section seems to be a life-saving measure. About a month ago I saw a woman with a low blood pressure, who had had two convulsions. She seemed to be in a very fair condition, so that I did not advise cesarean section. She was delivered in the afternoon of a small child without any trauma; still she died. Another woman recovered from a cesarean section, and in about a week became maniacal. The condition lasted a few days, and then she recovered.

DR. CAREY CULBERTSON, Chicago: It has remained for the American obstetrician to emphasize the value of cesarean section for the relative indication, as it is called in the textbooks. By the relative indication we mean all of the other things for which we are now doing cesarean section, instead of the absolutely contracted pelvis. In the clinic of Dr. J. Clarence Webster, I have seen a woman with an acute anemia from placenta praevia develop an infection after a version and extraction, and I have seen a woman who is sectioned as soon as she begins to bleed. Comparing the difference in the recovery, the difference in the fetal mortality, and the difference in the subsequent morbidity, there is no question as to the advantage of cesarean section in a number of these cases.

Focal Infections in the Nose and Throat: Means of Diagnosis and Elimination

DR. W. E. PATTERSON, Minneapolis: Focal infections are not wholly confined to the teeth, tonsils and accessory sinuses, but one may find the same constitutional effects resulting from a diseased appendix, or an abscess formation around an ingrowing toenail. As to the relative significance of the various foci in the head, in my opinion the teeth come first, the faucial tonsils second, then the accessory sinuses, and lastly the middle ear and mastoid. I have found vaccines in conjunction with local treatment to be a most valuable aid in many cases. The essentials in the treatment of sinus infections are drainage, and when there is a resultant anemia, some form of tonic treatment.

Effect of Tonsillectomy on Focal Infection

DR. NORVEN H. GILLESPIE, Duluth: Joint, heart, kidney, goiter and glandular conditions show such marked improvement after tonsillectomy as to leave no doubt as to the source of the infection. The infection may be divided into two groups, that due to chronic conditions in the tonsil itself, and that reaching the tonsil from without, through the medium of water, milk and other articles of food.

DISCUSSION

DR. FRANK E. BURCH, St. Paul: A wave of conservatism is passing over the profession with reference to the removal of tonsils. Their wholesale removal, especially of juvenile tonsils, is a thing of the past. There has been a lack of discrimination in determining what tonsils should and what tonsils should not be removed.

DR. CHARLES M. SPRATT, Minneapolis: A diseased tonsil without enlargement should be removed. Any person who has recurring muscular or joint trouble, so-called rheumatism, or arthritis, should have his tonsils removed.

DR. J. D. LEWIS, Minneapolis: It is my belief that tonsillectomies, as usually performed, are complete in only 25 per cent. of the cases. I do not believe that by any blunt or sharp dissection method one is able to escape rupture of the capsule and therefore remove the tonsil completely.

Jejunostomy: Its Indications and Methods

DR. CHARLES H. MAYO, Rochester: Jejunostomy in the first loop of the intestine is very important in the maintenance of nutrition. It is used principally for palliation in inoperable diseases, and occasionally as a temporary expedient in benign lesions. When it is made low in the jejunum it is classified with enterostomy for the relief of obstruction in the small intestine. The Witzel method of inserting the tube, and the tube drawn through the punctured opening in the omentum, before it is passed through the abdominal wall, guard the opening against leakage and maintain mobility of the bowel.

Pathology and Treatment of Osteomyelitis

DR. ALEXANDER R. COLVIN, St. Paul: It is sometimes said that if acute osteomyelitis were treated properly, there would not be a chronic stage. This is true only in part, for many cases are so insidious in onset that marked bone changes have occurred before we see them at all, and before the patient has had any symptoms impelling him to seek assistance. It is in these chronic forms that the greatest difficulty in diagnosis occurs because of the tumor-like thickening of the bone, with few symptoms; tumor-like masses of indurated tissues surrounding the bone increase the difficulty. After the removal of the sequestrums, each case demands separate consideration as to the best means of dealing with the resulting cavity. In the young, in whom the osteogenesis is comparatively rapid, the bone wax is especially valuable, if for no other reason than for furnishing a kind of drain; but occasionally when drainage ceases it keeps the cavity filled until such time as osteogenesis has built sufficient new bone to obliterate the cavity from which the wax has gradually been absorbed. In adult bones, in which osteogenesis is slow or it may fail to accomplish the desired result, the plastic use of bone, muscle, fat or skin may be desirable. During the course of the disease, joint contractures are prone to occur, and protective and mechanical treatment to prevent these are of the utmost importance. Where the sequestrum involves a large part of the shaft, fracture of the involucrum may also occur if protection is not sufficient.

DISCUSSION

DR. JAMES E. MOORE, Minneapolis: It is our experience at the University Clinic that many patients with osteomyelitis come in who have not been recognized as such, and often present themselves with a diagnosis of rheumatism. At a very early stage the roentgenogram will not show infection in the medullary cavity of bone, even when there is a pronounced abscess at the end of the diaphysis of the long bone.

DR. SAMUEL J. MIXTER, Boston: An adult may have a sudden acute bone infection. Nearly the whole shaft of the tibia may be involved, and the man is very sick. An opening into the bone is made, with insufficient drainage. That man can be cured only by amputation of the leg. I have seen these patients die in from three to twenty-four hours after such an operation. Amputation will save them, whereas a conservative operation will kill them.

Colles' Fracture

DR. OWEN W. PARKER, Ely: The thing of greatest importance in the treatment of a Colles fracture is to reduce it properly, and the next most important thing is not to abuse the use of splints. The successful treatment of all fractures requires good judgment, common sense, constant attention to details, a knowledge of many methods, and the election of the one which in the individual case will lead to a restoration of the form and function of the injured limb in the shortest possible time with the least danger and inconvenience to the patient.

DISCUSSION

DR. ALEXANDER R. COLVIN, St. Paul: A fracture with a little triangular crack through the base of the ulna, without any displacement, is often mistaken for a simple sprain, and many of these injuries, without deformity, may be mistaken for fractures.

DR. ARCHIBALD MACLAREN, St. Paul: Colles' fractures should always be reduced under anesthesia. We should never cover any fracture up so that we cannot see it.

DR. H. B. SWEETSER, Minneapolis: I recall two patients who apparently had entirely recovered; but when they returned there were nonunion and deformity. In both of these cases there was evidence of syphilis. I have not seen any cases of Colles' fractures in a normal person when there was nonunion.

DR. E. P. HAWKINS, Montrose: I must protest against the general statement that unless these fractures are reduced properly they do not remain in position. One cannot always

reduce them at once. If one can wait for a week and then put the patient under anesthesia, one can reduce all of them; but there are cases, as I know from personal experience, that cannot be reduced at first.

DR. ARNOLD SCHWYZER, St. Paul: We should not allow the remarks of Dr. Hawkins to go unchallenged, because the time when we can reduce these fractures is at the start. It is the time when we have no callus formation and no additional swelling, and I do not know of a case that cannot be reduced if one follows the advice of the essayist.

DR. GEORGE EARL, St. Paul: Two months ago, a lineman fell from the top of a pole. Among other injuries that he sustained, the ulna was found protruding, dislocated, with a Colles fracture. It was impossible to put the hand in a straigh position to hold the Colles fracture in place because there was also a dislocation of the ulna; it was completely broken off, but by putting it up at an angle we obtained a satisfactory position.

DR. SAMUEL J. MIXTER, Boston: One may have a tremendous deformity, yet a perfect functional result. The cosmetic result may be bad, but the hand is just as good as ever.

Bursae

DR. GEORGE EARL, St. Paul: Chronic ailments, especially of the extremities, may be due to inflamed bursae. While trauma was at first thought to be all important, increasing recognition has been given to the rôle of infections and other factors, such as metabolic disturbances. Conservative surgical treatment is often sufficient, but pyogenic infection demands incision.

DISCUSSION

DR. EARLE R. HARE, Minneapolis: Oftentimes the diagnosis of surgical bursae is not made, and patients are allowed to suffer indefinitely when a cure might be effected by proper treatment. The etiology is a bone of contention at the present time. There are those who believe that the etiology lies in trauma, while others believe that it lies in infection. With our advancing knowledge of infection, it is very likely that the cause lies more toward the side of infection than it does toward the side of traumatism. Some years ago I removed with perfect result a pair of prepatellar bursae that measured an inch and a half in diameter, and an inch in thickness, even though there was active suppuration going on in one bursa at the time of its removal.

DR. ARNOLD SCHWYZER, St. Paul: When we have to operate in these cases, whether there are simply a few small deposits or they are infected, we should remove the bursa as a whole.

DR. JOSEPH R. KUTH, Duluth: In the past six or seven months I have seen six or seven cases. The impression I received was that the trouble undoubtedly followed trauma; but whether trauma was the primary or sole cause I am unable to say. These cases were notable for their chronicity.

DR. LOUIS DAUGHERTY, St. Paul: I have seen three cases of subdeltoid bursitis. In all there were calcareous deposits. I was impressed with the chronicity of the condition. These patients complained of pain in the shoulder joint which radiated down the arm, and the condition was diagnosed as neuritis.

DR. H. B. SWEETSER, Minneapolis: I had an interesting experience bearing on the diagnosis of bursitis. A woman had several sinuses around the hip joint discharging pus. One man made a diagnosis of tuberculosis of the hip. I thought it was tuberculosis of the spine. Roentgen examination showed nothing wrong with the hip. There was no interference with the motion of the vertebrae. We injected these sinuses with bismuth paste without any result, and then I operated and found that the focus of infection was a bursitis in the gluteus maximus muscle.

DR. M. S. HENDERSON, Rochester: When the bursae are excised the entire sac should be taken out. In a large number of cases of bursitis which I have seen, the bursae had merely been incised and the sac had not been dissected out.

Rickets, with Especial Reference to Premature Infants

DR. E. J. HUENEKENS, Minneapolis: I have been using tricalcium phosphate and cod liver oil in the treatment of rickets in breast fed infants, both full term and premature, with very good results. In the beginning I had great difficulty in obtaining a smooth and palatable mixture, but finally found that 10 per cent. of tricalcium phosphate (C. P.) in emulsion of cod liver oil (U. S. P.) makes a smooth suspension, which is readily taken by most infants.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

November, XIV, No. 5

1 *Condition of Reflexes in Poliomyelitis. J. G. Regan, Brooklyn.—p. 321.
2 *Infantile Scurvy. Its Pathogenesis. A. F. Hess, New York.—p. 337.
3 Intestinal Bacteria in Children. W. W. Ford, K. D. Blackfan and M. D. Batchelor, Baltimore.—p. 354.
4 *Relation of Reaction of Urine to Diet in Infants and Children. C. Torres, Bogota, Columbia, S. A.—p. 365.
5 *Banana as Food for Children. M. C. Pease and A. R. Rose, New York.—p. 379.

1. **Reflexes in Poliomyelitis.**—Regan points out that the most common symptom of poliomyelitis is an alteration in the reflexes accompanying or following a short febrile period. The patellar reflex is most frequently affected owing to the common involvement of that region of the spinal cord which innervates the quadriceps extensor group of muscles. It was altered in various ways in 81 per cent. of 818 cases. Hyperactivity of the knee jerks is usually, if not invariably, the first change to occur in the preparalytic stage. Hyperactivity of the patellar reflex is most frequent in the meningitic and ataxic cases, and in the combined types of the disease in which meningitic symptoms were prominent. Absent or normal response is the rule in purely bulbar cases, except in the very early stages. An exaggerated reflex may be encountered in an atrophied and obviously paralyzed leg. Absence of the knee jerk is most frequently encountered in the myelitic and bulbar types of the malady.

The patellar reflex may remain normal throughout the entire paralytic phase, especially in bulbar and ataxic cases. It is also common in myelitic cases when the paralysis is limited to the upper extremities and trunk. It is scarcely ever encountered where the hydrocephalus is at all marked. The plantar reflexes are exaggerated in the preparalytic stage. The reflex was altered in 41 per cent. of 643 cases specified in the paralytic stage. An exaggerated response may persist into the paralytic stage, more especially in the meningitic and ataxic classes of cases. A diminished reaction was found most common in the ataxic, the myelitic meningitic, and the purely myelitic forms of the disease. The reflex was absent most frequently in the purely bulbar and in the combined bulbar and myelitic cases. A normal reaction was encountered most often in the ataxic, bulbar myelitic and bulbar meningitic forms of the malady. Often the first sign of improvement in cases with marked paralytic involvement is the gradual reappearance of the reflex. The Babinski phenomenon is relatively rare in poliomyelitis, but it occasionally occurs in the meningitic form of the disease. Its presence in a case in which the diagnosis was doubtful would always be decidedly in favor of tuberculous, and, to a less extent, cerebrospinal meningitis. A true ankle clonus is likewise very rare in contradistinction to the other forms of meningitis. The pupillary reflex is but little altered.

2. **Infantile Scurvy.**—Hess emphasizes the fact that infantile scurvy is an intestinal intoxication or an autointoxication due to the overgrowth of harmful bacteria in the intestine. It is the product of an unbalanced flora which is no longer controlled by a proper dietary. Oliguria is a common symptom of scurvy. The mild therapeutic effect of citric acid may be ascribed partly to its diuretic properties. Orange juice also was found to bring about marked diuresis. One of the striking and important symptoms of scurvy is a susceptibility to infection (furunculosis, nasal diphtheria,

"grip," etc.). Some hemorrhages are due to this secondary infection, and are to be regarded not as scorbutic, but rather as focal complications. Other hemorrhages are truly scorbutic. Scurvy, however, is essentially a disorder characterized by malnutrition and not by hemorrhage, taking months to develop, and, from a clinical point of view, frequently latent or subacute.

4. **Diet and Reaction of Urine in Children.**—Torres points out that the difficulties often encountered in changing the reaction of the urine in children are very much diminished when a suitable diet is prescribed. Diminishing the amount of protein in the diet to 2 gm. and sometimes to 3 gm. per kilogram will often in itself render the urine alkaline without using a drug. In cases in which the amount of protein reaches the lowest physiologic limit without turning the urine alkaline, one may continue to diminish the acidity by adding vegetables to the diet. In older children with whom the food is more varied, one can do much by regulating the diet in accordance with the principles outlined in this article. In cases in which vegetables are used to turn the urine alkaline, one must use, if possible, vegetables in which the amount of protein is smaller in proportion to the salts, like fruits, rice, wheat, etc., rather than those which have a large amount of protein like peas, beans, etc. Vegetables which contain purins, like coffee, tea and cocoa, may increase the acidity, because they may produce uric acid. In cases of infection, especially in infections of the urinary tract, and in cases of starvation, the urine tends to become more acid than in other conditions; therefore it is more difficult to render it alkaline. When drugs are used without the proper diet, the doses necessary to make the urine alkaline are much larger than is ordinarily believed. The action of drugs (either acid or alkaline) is very fleeting; therefore they should be given in large and frequent doses.

5. **Banana as Food.**—Numerous digestion experiments were performed by Pease and Rose to determine the food value of the banana. The results of their experiments show that the banana is a useful fruit that can with profit enter liberally into the child's dietary provided it is fully ripe or well cooked. If eaten baked in the yellow stage of ripeness or if eaten raw when fully ripe, the banana makes a delightful and highly nutritious article of food. Its composition does not warrant the use of the banana as the main component of the child's dietary, but it can compete well with other fruits and is decidedly to be preferred to candies. The nutritional value is relatively high, approximately one calorie per gram of pulp; and its carbohydrates, when it is fully ripe or cooked, are not less assimilable than those of cereals and potatoes. In the raw food the digestibility is directly proportional to the ripeness of the fruit. There is no positive evidence that the banana influenced bowel movements. In the many tests there was no suggestion whatever of any deleterious effect from consuming large amounts of fully ripe bananas. Prolonged use of the underripe fruit, on the other hand, developed undesirable symptoms. The banana ought not to be eaten raw until after the brown spots begin to appear. The brown color of the peel, however, should not be confused with the darkening due to bruises. An injured banana is soon invaded by molds and yeast cells. The banana properly handled and allowed to ripen is a wholesome food, uncontaminated by dirt and pathogenic germs even if purchased from the push cart in the congested streets.

American Review of Tuberculosis, Baltimore

October, I, No. 8

6 *Rôle of Surgery in Treatment of Intestinal Tuberculosis. E. Archibald, Montreal, Canada.—p. 449.
7 *Treatment of Tuberculous Hemoptysis with Thromboplastin and Euglobulin. G. Mannheimer and S. L. Wang.—p. 468.
8 Tuberculosis and Pregnancy. Study of Three Hundred Cases with Review of Literature. S. A. Douglass and J. E. J. Harris, Mount Vernon, Ohio.—p. 478.
9 *Experiments with Tuberculous Sputum Twenty-Two Years Old. N. B. Burns, Boston.—p. 484.
10 Clinical Observations Derived from Examination of Over Three Thousand Chests Checked by Stereoroentgenograms. K. Dunham, Cincinnati.—p. 489.
11 Cone and Collateral Circulation in Pulmonary Tuberculosis. K. Dunham, Cincinnati.—p. 498.

6. **Surgical Treatment of Intestinal Tuberculosis.**—Archibald says when the small bowel alone is involved, there is present constipation, often quite marked and there is no thickening or mass, and in particular no tenderness to palpation localized in the cecal region. When the cecum with or without the ascending colon is involved, and the small bowel is free, there is present diarrhea or alternating constipation and diarrhea, and there is always to be felt a fairly defined thickening, sometimes even a mass, and there is tenderness to palpation in the cecal region. When both small bowel and cecum are involved there is a mixture of the above signs and symptoms. When the transverse and descending colons are diseased in addition, there are very rarely any signs that point to it; these are comparatively silent regions. When the appendix alone is tuberculous, it is not possible before operation to exclude the possibility of disease in the cecum; one can only say that there is disease in that region. Between simple appendicitis and tuberculous disease it is often difficult to make a diagnosis; but it may be said that, where definite thickening of the tissues in the appendix region is felt, without there being an acute inflammatory reaction, and with a history of chronic slight pain and of occasional subacute attacks with persisting soreness, then the condition is much more suspicious of tuberculosis of the appendix, and possibly also of the cecum, than of simple appendicitis. While in the majority of cases of intestinal tuberculosis the lungs are already seriously diseased, and while in such cases the early hopes of bringing about arrest of the pulmonary condition by surgical removal of the diseased bowel have not on the whole been realized, it may still be emphasized that complete relief of bowel misery in these distressing cases may very often be accomplished by a well planned and carefully executed operation. The good cases with but little pulmonary trouble and with eradicable bowel disease may frequently be cured by operation.

7. **Thromboplastin and Euglobulin in Hemoptysis.**—Twenty-three cases with moderate or copious hemorrhages which had a tendency to continue were treated by Mannheimer and Wang. All had definite pulmonary tuberculosis with positive sputum. Other medicinal treatment was omitted for the time being. In the beginning small doses were used, as nothing was known about the effects. They were subsequently increased and also given more frequently. When a hemoptysis recurred in the same individual at a later period different dosages were administered. This refers only to thromboplastin, which was used in 23 instances. In two cases a hemorrhage ceased after the injection of thromboplastin, but recurred subsequently and was not influenced by a repetition or increase of the dose. In all the other cases there was even no apparent benefit. Euglobulin was administered fifteen times. There was no improvement in any case. A few patients showed slight reactions as evidenced by a chill, elevation of temperature and general malaise. One developed a typical serum rash. These reactions were not severe and were of short duration. Altogether the author's results with thromboplastin and euglobulin in the treatment of tuberculous hemoptysis have been negative.

9. **Tuberculous Sputum Twenty-Two Years Old.**—In all the material examined by Burns acid fast organisms resembling tubercle bacilli structurally and in staining qualities were seen to be present. They were more numerous in the dried material in which no other organism could be found. No growth was obtained such as would prove, or even suggest, that these organisms still retained their viability. Innoculation of both culture mediums and guinea-pigs produced only negative results in the attempts to recover living tubercle bacilli from the material examined.

Boston Medical and Surgical Journal

November 1, CLXXVII, No. 18

12 *Use of Normal Blood Serum, Particularly with Reference to Treatment of Wounds. T. Leary, Boston.—p. 611.
13 Preparation of Blood Serum for Use. T. Leary and F. H. Dunbar, Boston.—p. 617.
14 *Anaphylactic Reactions to Normal Serums. T. Leary, F. H. Dunbar and J. W. Watson, Boston.—p. 618.
15 Case of Streptococcus Meningitis Successfully Treated with Normal (Human) Serum. F. P. McCarthy, Boston.—p. 621.

16 *Treatment of Wounds with Normal (Beef) Serum. J. H. Shortell, W. F. Cutting and T. Leary, Boston.—p. 622.
17 Physical Examination of Factory Employees; Two Thousand Consecutive Cases and Defects Found. R. W. Cutler, Worcester. —p. 627.
18 Future of Medicine. C. W. Eliot, Boston.—p. 631.

12. **Normal Blood Serum in Treatment of Wounds.**—Leary is convinced that normal serum may be accepted as a natural physiologic solution, readily miscible with the tissue secretions, and bland in its action, apart from certain toxic and anaphylactic properties, now regarded as useful under proper control; it possesses natural antibacterial properties; it is the storehouse of the specific antibodies; it contains ferments capable of digesting tissue detritus and exhibiting other useful activities; it is employed successfully in controlling hemorrhage other than that form (rhexis) requiring mechanical control; it is fitted to serve as a culture medium for tissue; it is able to excite the protective machinery in a non-specific manner, useful in therapy; it provokes a desirable leukocytosis, valuable in the treatment of infections.

14. **Anaphylactic Reactions to Normal Serums.**—The clinical application by the authors of beef serum in the treatment of wounds has been followed by no anaphylactic phenomena when the serum has been applied to wound surfaces. In six cases injections of serum were made, either subcutaneously or into the deep tissue. The amount injected was about 15 c.c. In three of these cases chills occurred within two hours of the injection. In only one case was the chill marked, the temperature reaching 103. In no case did a delayed anaphylactic reaction appear.

16. **Wounds Treated with Normal Beef Serum.**—The results obtained by the authors in a variety of cases show that serum will control a septic process, wherever contact is made between the serum dressing and the infected tissue. It is absolutely harmless to normal tissue. As a prophylactic agent in fresh wounds it is of value. Serum is a most marked stimulant of granulations. The authors believe that grafting can and should be practiced earlier following the use of serum than under any other agent. Injections of unheated beef serum are followed by rises in temperature, usually slight, perhaps with chill, but the reactions are short and not severe. Used as a dressing to wounds, no matter how large the surfaces are, it gives rise to no anaphylactic response.

Journal of Cancer Research, Baltimore

October, II, No. 4

19 *Relation of Induced Cancer Immunity to Tissue Growth and Tissue Degeneration. F. D. Bullock and G. L. Rohdenburg, New York.—p. 455.
20 *Splenectomy Exerts No Appreciable Influence on Immunity Against Transplanted Tumors. F. D. Bullock and G. L. Rohdenburg, New York.—p. 465.
21 *Loss of Power to Produce Sarcomatous Transformation in Stroma. W. H. Woglom, New York.—p. 471.

19. **Relation of Induced Cancer Immunity to Tissue Growth.**—It is claimed by Bullock and Rohdenburg that induced immunity to transplanted cancer is not solely due to growth or the metabolites of growth of the immunizing agent, nor is it due to death and degenerative metabolites of the injected material.

20. **Influence of Splenectomy on Immunity Against Tumors.**—Bullock and Rohdenburg found that splenectomy has no effect on the persistence of immunity induced by the receding rat sarcoma 7; neither does it influence the fate of regressive tumors. Splenectomized animals are no more resistant to immunizing agents than are normal animals. Splenectomy neither increases the percentage of takes nor favors the growth of spontaneous tumor grafts.

21. **Sarcomatous Transformation in Stroma.**—A transplantable mouse carcinoma, which exhibited in the first generation the power to cause sarcomatous transformation in its stroma, lost that power after the fourth generation, and has not regained it during three years cultivation. The question is raised by Woglom whether mouse tumors containing keratin may not, perhaps, induce sarcoma development in their stroma more often than other types of carcinoma.

Journal of Cutaneous Diseases, Chicago

October, XXXV, No. 8

22 Erythema Figuratum Perstans; Report of Cases. W. H. Mook, St. Louis.—p. 635.
23 Focal Infection in Etiology of Skin Disease. E. D. Chipman, San Francisco.—p. 646.
24 *Glycerin. D. W. Montgomery, San Francisco.—p. 662.
25 *Relation of Fruit Ingestion to Cutaneous Diseases. A. Davidson, Los Angeles.—p. 665.
26 Lymphadenosis Cutis Universalis, Associated with Generalized Erythrodermia and Atrophy of Skin. F. Wise, New York.—p. 669.

24. **Therapeutic Use of Glycerin.**—Glycerin is freely miscible in all proportions with water and with ordinary alcohol, it mixes well with all the ointment bases, and is an excellent solvent. In prescribing mercuric chlorid for tinea versicolor, by adding glycerin, the skin is kept moist and the medicament is retained. The following prescription is written by Montgomery:

℞ Hydrarg. bichlorid 53
Glycerin 15
Spts. vini rect. dil. 240
M. Sig.: Rub in well once a day.

One of the best lotions for roughness of the hands, as in chronic eczema, is composed of caustic potash (KOH), glycerin, alcohol and water:

℞ Potassii Hydroxidi 1.00
Glycerini .....
Spts. vini rect. ..... āā 66.00
Aq. rosae ..... ad 200.00
M. Sig.: Use on the hands once a day.

Petrolatum is the fatty base usually prescribed in ordering a paste, but glycerin may be employed. Such a prescription would be:

℞ Amyli .....
Zinci oxidi ..... āā 15.00
Glycerini 30.00
M. Sig.: Apply by spreading on with the hand.

The zinc oxid glycerin jellies form another set of preparations that, when judiciously employed, give excellent service. A formula that Montgomery has found excellent consists of:

℞ Gelatini 46.00
Zinc oxid 28.00
Glycerin 12.00
Aq. ad. 114.00

Heat the water and dissolve the gelatin in it, and then add the glycerin and the oxid of zinc and stir until cold. This makes 200 gm., a little over 6 ounces, which is a convenient amount to dress a surface equal to that of both legs.

25. **Relation of Fruit Ingestion to Cutaneous Diseases.**—According to Davidson if all fresh fruits were stricken from the dietary, one-third of the sickness incidental to childhood and early life would be eliminated. He says that of all California fruits the orange is the most deleterious. The strawberry outranks it as a cause of urticaria but the orange is more prone to cause the furred tongue, cloyed appetite and general depression, a symptom group that is classed as "biliousness." The evil lies wholly in the pulp or cellulose, the juice is perfectly wholesome. Oranges exhibit their poisonous qualities most intensely when eaten fresh off the tree. When cold stored for a few weeks they lose these poisonous qualities and may then be eaten with impunity. Next in order of unwholesomeness come the peach, apricot, plum and cherry. Pears, apples, grape-fruit and grapes seem to produce no anaphylactic symptoms. Dried fruits such as dates, figs and raisins are valuable foods and have apparently no direct action on the skin. Figs are the only dried fruit that have a noticeable laxative action. In mild cases of constipation two or three figs eaten before retiring produce satisfactory results. The imported fig alone has this quality; California figs, including the fertile seeded varieties, do not seem to have this virtue. Raisins, if freely eaten, may cause an irritative diarrhea and in an unusual way; the skins are somewhat tough and difficult to digest and are prone to adhere by their flattened surfaces to the valvæ conniventes, where they may remain for some time before irritation is produced. The musk melon or canteloupe is apparently harmless, but Davidson does not feel quite sure about the watermelon.

The melons belong to a family of plants that in their wild state are drastic purgatives and in the instances where they

disagree, they may have possibly reverted to the family habit. Many people eat all manner of fruit not only with impunity but with pleasure and benefit, as it gives them that feeling of repletion that is essential to mental well being and prevents the excessive use of the ordinary proteins. There is a class of people who have digestions akin to those of the herbivora, who can eat, satisfactorily digest and assimilate all manner of fruits and vegetables, and examination of the stools show that the digestion of the cellular elements is complete. These people have one distinguishing feature: they all show a tendency to constipation and high blood pressure. In practice, then, one may lightly regard the possibility of anaphylaxis in these people. On the other hand, in those who suffer from catarrhal affections of the large bowel (and these affections are very numerous, ranging from mild catarrhal inflammation to membranous colitis) the anaphylactic action of fruits is liable to be very marked. There is, too, the possibility that the frequent association of anaphylaxis and colitis may be due to the parenteric action of the colon bacillus gaining access to the blood through the damaged points in the mucous lining.

Journal of Infectious Diseases, Chicago

November, XXI, No. 5

27 *Etiology of Common Colds. Probable Rôle of Filtrable Virus as Causative Factor; with Experiments on Cultivation of Minute Micro-Organism from Nasal Secretion Filtrates. G. B. Foster, Jr.—p. 451.
28 Hemolysin Production and Acid Production by Streptococci. S. Sekiguchi, Chicago.—p. 475.
29 Some Factors in Swimming Pool Control. W. D. Stovall and M. S. Nichols, Madison, Wis.—p. 484.
30 *Preparation and Method of Using Toxin-Antitoxin Mixtures for Active Immunization Against Diphtheria. A. Zingher, New York.—p. 493.
31 Effect of Anilin in Rabbits. M. W. Brown, Chicago.—p. 497.
32 *Wassermann Reaction with Glycerolated Human Serum More than a Year Old. E. H. Ruediger, Bismarck, N. D.—p. 502.
33 *Rocky Mountain Spotted Fever in California. J. G. Cumming, Berkeley, Calif.—p. 509.
34 *Complement Fixation with Specific Antigen in Acute Poliomyelitis. M. Neustaedter and E. J. Banzhaf.—p. 515.

27. **Etiology of Common Colds.**—From the experimental evidence presented by Foster it seems that the following facts have been established: Common colds of the ordinary type are infectious. It has been demonstrated experimentally that the virus of common colds occurs in the nasal secretions; and that this virus is capable of passing through Berkefeld filters which are impermeable to ordinary bacteria. By the employment of special anaerobic methods the virus of common colds has been cultivated in vitro by Foster, and has proved capable of repeated recultivation in subcultures. Experimental inoculations have demonstrated that Berkefeld N filtrates of subcultures of the virus, in the second generation at least, are infective. A peculiar minute micro-organism has been isolated from cultures made from the filtered nasal secretions in common colds. This micro-organism can be passed through Berkefeld N filters, and has been recultivated from culture-filtrates. Although conclusive proof of its nature has not been adduced, the experiments suggest that the micro-organism described bears a definite relation to the true infective agent. Analysis of the results of Foster's experiments showed that of the ten men inoculated, seven developed clear cut and definite symptoms of acute coryza; two reacted questionably, while one remaining case exhibited no symptoms. The experiments were adequately controlled.

30. **Toxin-Antitoxin Immunization against Diphtheria.**—The indications for active immunization with toxin-antitoxin are divided by Zingher into two groups: (*a*) as a general prophylactic measure, and (*b*) to control outbreaks of diphtheria. It is a safe and convenient rule to follow to immunize with toxin-antitoxin all children below 18 months of age irrespective of the Schick test they may show at the time of immunization. The immunity developing from toxin-antitoxin is slow in appearing, and is, therefore, not a reliable safeguard in hospital wards where children are crowded together, and suffering from various contagious diseases. But in institutions where small outbreaks of diphtheria have occurred, or where diphtheria is more or less constantly present and clinical cases and bacillus carriers steadily appear, Zingher says, the use of antitoxin alone has often been insufficient to stamp out the disease, and the combined application of the Schick test and active immunization with toxin-antitoxin has given most successful and encouraging results.

32. **Wassermann Reaction with Old Glycerolated Human Serum.**—Ruediger has found that pure glycerol is an ideal preservative for human serum intended for the Wassermann reaction. In order to prevent the serum from becoming anticomplementary, it must be heated to about 56 C. for thirty minutes and then be mixed with an equal volume of glycerol. Serum kept for more than a year gave practically the same results as when fresh and without preservative.

33. **Rocky Mountain Spotted Fever.**—The results of animal inoculations in Cumming's cases definitely establish the occurrence of Rocky Mountain spotted fever in California. The occurrence of a case in Ventura County marks that region as a new area of possible prevalence of the disease in California.

34. **Complement Fixation in Acute Poliomyelitis.**—Neustaedter and Banzhaf have obtained a specific antigen for complement fixation in poliomyelitis by digesting poliomyelitic virus with trypsin. A 5 per cent. suspension of brain and cord of monkeys that have died of poliomyelitis is filtered through a Berkefeld or Heim filter, sterile water being used as the menstruum. The trypsin is added in proportion of 1:50 and permitted to act at room temperature for three hours; 0.4 per cent. tricresol is then added to stop further action by the trypsin.

Journal of Nervous and Mental Disease, Lancaster, Pa.

October, XLVI, No. 4

35 *Duration and Classification of Brain Tumor. E. D. Bond, Philadelphia.—p. 241.
36 *Reaction of Pupil to Colored Light. J. A. Cutting, Agnew, Calif.—p. 246.
37 Central Atrophy; Report of Cases. J. H. W. Rhein, Philadelphia.—p. 251.
38 Lesions of Frontal Lobe Simulating Cerebellar Involvement, Differential Diagnosis. A. Gordon, Philadelphia.—p. 261.

35. **Brain Tumor.**—A woman of 49 had a history of convulsions for twenty-nine years, headaches for two years, and many of the usual localization symptoms of brain tumor for four months before her death. Necropsy showed a tumor which might be classed as a glioma, but which Bond says should be considered as coming from a precursor of the glia cell.

36. **Reaction of Pupil to Colored Light.**—Cutting has found that the pupil reacts differently to different colored lights, giving a greater reaction in some than in others in the following order: white, yellow, reddish yellow, green, blue and violet, thus following the luminosity of the spectral colors. There is no reaction specific to different diseases—the same law holds for the paretic as for the hysteric. There is a distinct clinical value in using the green light as a "measure" for amplitude of reaction, which cannot be obtained from white light. It is a convenient method for measuring the amount of light necessary to produce a pupillary response.

Journal-Lancet, Minneapolis

November 1, XXXVII, No. 21

39 Mechanical and Surgical Treatment of Anterior Poliomyelitis. A. J. Gillette and C. C. Chatterton, St. Paul.—p. 691.
40 Selection of Donor for Transfusion. A. H. Sanford, Rochester.—p. 698.
41 Carcinoma of Colon; Report of Cases. G. M. Williamson, Grand Forks, N. D.—p. 702.
42 Bronchoscopy and Esophagoscopy; Report of Cases. A. D. McCannel, Minot, N. D.—p. 704.

Medical Record, New York

November 3, XCII, No. 18

43 What American Soldier Now Fighting in France Should Know About Tuberculosis. S. A. Knopf (New York and Paris), and W. H. Welch, Baltimore.—p. 751.
44 Cloudy English and Cholecystostomy. D. H. Stewart, New York.—p. 756.
45 Premature Old Age. J. M. Taylor, Philadelphia.—p. 758.
46 Emergency Head Surgery. C. E. Dowman, Atlanta, Ga.—p. 760.
47 Protein Disorders and Convulsions. F. J. Farnell, Providence, R. I.—p. 763.
48 Modern Treatment of Syphilis. C. W. Shropshire and C. Watterston, Birmingham, Ala.—p. 766.

49 Case of Hydrophobia; Attempted Specific Medication with Immune Human Serum. O. Berghausen, Cincinnati.—p. 768.
50 Points on Nitrous Oxid. R. G. McGahey, Birmingham, Ala.—p. 769.

Michigan State Medical Society Journal, Grand Rapids

November, XVI, No. 11

51 Uncinariasis Experiences in Eastern Kentucky. B. N. Epler, Kalamazoo.—p. 455.
52 Medicine on Two Battle Fronts. J. D. Dunlop, Alpena.—p. 458.
53 Focal Infection. W. Northrup, Grand Rapids.—p. 462.
54 Talipes Equino Varus. E. A. Linger, Rockland.—p. 464.
55 Sudden Death in Case of Syphilitic Aortitis. A. C. Furstenberg, Ann Arbor.—p. 468.
56 Case of Hysterical Blindness. C. D. Camp, Ann Arbor.—p. 470.
57 Case of Premature Separation of Placenta Complicating Nephritic Toxemia. L. L. Bottsford, Ann Arbor.—p. 472.
58 Case of Pellagra. J. A. Elliott, Ann Arbor.—p. 475.

Missouri State Medical Association Journal, St. Louis

November, XIV, No. 11

59 Progress in Obstetrics. B. G. Hamilton, Kansas City.—p. 465.
60 Lumbar Puncture in Alcoholism. F. M. Barnes, Jr., and E. E. Hein, St. Louis.—p. 469.
61 Preservation of Arm Function After Operations for Carcinoma of Breast. W. T. Coughlin, St. Louis.—p. 475.
62 Plea for Less Operative Interference in Treatment of Organic Stricture of Urethra. L. Bartels, St. Louis.—p. 479.
63 Protein Indigestion in Infants. J. Zahorsky, St. Louis.—p. 484.
64 Two Cases of Idiopathic Tetanus Due to Decayed Teeth. E. W. Saunders, St. Louis.—p. 485.

New Orleans Medical and Surgical Journal

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65 Present Status of Inguinal Hernias. E. D. Martin, New Orleans.—p. 408.
66 Syphilis of Thyroid; Report of Three Cases. J. A. Storck, New Orleans.—p. 414.
67 Importance of Rest on After Results of Pelvic Infections. W. B. Chamberlin, Baton Rouge.—p. 418.
68 Repair and Treatment of Fractures. I. Cohn, New Orleans.—p. 419.
69 Gastric Crises of Tabes; Report of Cases. A. L. Levin, New Orleans.—p. 425.
70 First Case of Leishmaniosis Cutanea in Venezuela. J. Iturbe, Caracas, Venezuela.—p. 430.
71 Anatomy of Cercaria of Schistosomum Mansoni. J. Iturbe, Caracas, Venezuela.—p. 433.
72 Influenza. A. J. Reynolds, Fort Necessity.—p. 434.
73 Imbecility; Asexualization as a Means of Prevention. H. L. Fougerousse, Pineville.—p. 437.
74 Tetanus Resulting from Bite of Pig. J. T. Cappel, Alexandria.—p. 440.
75 Suprarenal Syndrome in Paludism. C. Fraga, Bahia, Brazil.—p. 443.
76 Blister Beetles as Public Nuisance. A. J. Chalmers and H. H. King.—p. 445.
77 Mycetoma and Pseudomycetomatous Formations. A. J. Chalmers and R. G. Archibald.—p. 455.

New York Medical Journal

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78 Antitoxin for Gaseous Gangrene. C. G. Bull, New York.—p. 821.
79 Weight of Clothing and Its Relation to Weight of Child in First Five Years of Life. J. P. C. Griffith, Philadelphia.—p. 823.
80 Diaphragmatic Breathing. I. H. Hance, Lakewood, N. J.—p. 825.
81 Influence of Labor on Brain Development of Child. M. P. E. Groszmann, Plainfield, N. J.—p. 827.
82 Manic Depressive Psychoses Associated with Malignant Conditions. S. L. Immerman, Philadelphia.—p. 828.
83 New Type of Rotary Mesh Filter for Use in Deep Roentgen Therapy with Special Reference to Vesical Neoplasms. W. H. Meyer, New York.—p. 829.
84 Phlebitis of Deep Dorsal Vein of Penis. E. N. Turkus, New York.—p. 837.
85 Case of Diverticulitis of Cecum. W. R. Jackson, Mobile, Ala.—p. 838.

Oklahoma State Medical Association Journal, Muskogee

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86 Metastases. S. H. Landrum, Altus.—p. 421.
87 Women as Insurance Risks. J. S. Hartford, Oklahoma City.—p. 424.
88 Double Undescended Testicles; Report of Case. F. M. Sanger, Oklahoma City.—p. 427.
89 Simple Cystoscope in Diagnosis. H. Reed, Oklahoma City.—p. 429.
90 Muscle Training in Infantile Paralysis. D. J. Holland, Oklahoma City.—p. 431.
91 Acute Intestinal Obstruction. F. L. Carson, Shawnee.—p. 433.
92 Diagnosis and Treatment of Ectopic Gestation. J. H. White, Muskogee.—p. 435.

Ophthalmic Record, Chicago

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93 Tendon Transplantation of Eye Muscles. H. W. Woodruff, Joliet.—p. 545.
94 Antityphoid Inoculations and Ocular Lesions. F. P. Calhoun, Atlanta, Ga.—p. 553.
95 Safety First in Cataract Operation. R. W. Perry, Seattle.—p. 555.
96 Unusual Case of Electric Ophthalmia. D. E. Compere, Dallas, Texas.—p. 558.
97 Extensive Plastic Ectropion Operation with Pedicled Flap. F. Allport, Chicago.—p. 559.
98 Protective Eye Shield. J. M. Patton, Omaha.—p. 561.
99 Case of Reattachment of Retina—Trephine Operation. E. M. Blake, New Haven, Conn.—p. 562.
100 Interstitial Keratitis with Special Reference to End Result. G. S. Derby, Boston.—p. 563.

Philippine Journal of Science, Manila

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101 Varying Morphology of Bacillus Leprae and Routine Microscopic Examination of Nasal Mucus in Lepers. J. A. Johnston, Manila.—p. 115.
102 Amebic Abscess of Liver Among Filipinos. R. Abriol.—p. 121.
103 Two Cases of Balantidial Colitis. C. H. Manlove.—p. 149.

Rhode Island Medical Journal, Providence

November, I, No. 11

104 Stiff and Painful Shoulder; Report of Cases. R. Hammond, Providence.—p. 223.
105 Exophthalmic Goiter; Report of Cases. C. A. McDonald, Providence.—p. 227.
106 Percy Operation for Inoperable Carcinoma of Uterus and Vagina. D. J. Bristol, Jr., Boston.—p. 230.

Surgery, Gynecology and Obstetrics, Chicago

November, XXV, No. 5

107 *Restoration of Gastro-Intestinal Continuity by Means of Anticolic Gastrojejunostomy Following Partial Gastrectomy for Cancer of Pyloric End of Stomach. D. C. Balfour, Rochester, Minn.—p. 473.
108 Case of Section of Duodenum. P. Escudero and R. E. Pasman, Buenos Aires.—p. 477.
109 Some Causes of Occasional Failure in Operative Treatment of Chronic Gastric and Duodenal Ulcers. G. Woolsey, New York.—p. 481.
110 Duodenal Diverticula; Report of Case Associated with Duodenal Ulcer. H. P. Ritchie and G. L. McWhorter, St. Paul, Minn.—p. 485.
111 Tuberculosis of Stomach; Report of Case of Multiple Tuberculous Ulcers: Bibliography. A. C. Broders, Rochester, Minn.—p. 490.
112 Stenosis of Gastro-Enterostomy Stoma, Simulating Recurrence of Carcinoma of Stomach; Report of Two Cases. R. Lewisohn, New York.—p. 505.
113 Sterilization and Closure of Suppurating Fractures. M. Guillot and H. Woimant.—p. 507.
114 Suction Bulb Action of Gallbladder. A. Werelius, Chicago.—p. 520.
115 *End-Results of Nephrectomy for Renal Tuberculosis. W. E. Lower, and T. P. Shupe, Cleveland.—p. 522.
116 Ligature of Innominate Artery for Cure of Subclavian Aneurysm. P. F. Morf, Chicago.—p. 526.
117 Exploratory Laparotomy; Its Use and Misuse. C. H. Parkes, Chicago.—p. 528.
118 Congenital Absence of Uterus and Vagina; Report of Six Cases. E. Novak, Baltimore.—p. 532.
119 Principles Governing Spontaneous Repair and Operative Closure of Vesicovaginal Fistula. R. T. Frank, New York.—p. 538.
120 Surgical Significance of Cysticoduodenal and Cysticocolic Ligaments. W. Van Hook, Chicago.—p. 551.
121 Wire Banding for Fractures. F. J. Cotton and J. Duff, Jr., Boston.—p. 557.
122 Treatment of Burns and Granulating Surfaces with Paraffin Film Preparations. E. B. Haworth, Pittsburgh.—p. 558.
123 *Preliminary Report on Simultaneous Use of Indigocarmin and Phenolsulphonephthalein Tests in Surgical Diseases of Kidney. A. Peterson, Los Angeles.—p. 561.
124 Rare Developmental Anomaly (Constriction) of Rectum, with Description of Operative Technic Employed for Its Correction. M. Rabinovitz, New York.—p. 565.

107. **Restoration of Gastro-Intestinal Continuity.**—In the method described by Balfour the resection is carried out in the ordinary way with especial attention to such important points as the wide removal of gland-bearing tissue, the avoidance of injury to the middle colic blood supply of the transverse colon, the resection made well beyond the cancer limits, the cauterization of all cut mucous surfaces to prevent cancer cell transplantation, and the secure inversion and burial of the duodenal stump. The first loop of jejunum is procured and a point about 14 to 18 inches from the duodenojejunal

angle is marked. The jejunum is then carried up in front of the transverse colon and omentum and a segment of suitable size is chosen at the point already marked. This section of jejunum is directed so that the proximal end of the loop will be approximated to the lesser curvature of the stomach. A series of interrupted silk sutures in the serosa is used for the first line posteriorly, beginning at the greater curvature. All these sutures are placed before any are tied, and the ends of the top and bottom sutures may be conveniently left as guides. The first suture line is about one-half inch below the clamp on the cut end of the stomach, and on the side of the jejunum about three-fourths inch from the summit of the loop. The jejunum is now incised and the crushing clamp removed from the stomach. Any actively bleeding vessels are ligated. The posterior row of the anastomosis uniting the posterior wall of the stomach to the inner cut edge of the jejunum is of chromic catgut. The stitches on the gastric side should be taken after the edge which has been crushed by the clamp has been trimmed with the scissors. A second row of finer catgut may be used to advantage in the posterior line. The first chromic catgut suture is continued in front in the usual way to complete the closure. An interrupted silk suture line similar to that used posteriorly is placed anteriorly, particular care being taken to reinforce the angle of anastomosis at the lesser curvature. A few interrupted silk sutures are placed where necessary further to protect the anterior suture line and the suture at the lesser curvature, the stump of gastrohepatic omentum which contains the ligated gastric artery being utilized as a support to the gastrojejunal angle at this point.

115. **Nephrectomy for Renal Tuberculosis.**—This paper is based on a study of eighty-seven consecutive nephrectomies for tuberculosis of the kidney. Among these cases there were two deaths within four weeks after the operation and before the patients left the hospital. The cause of the immediate mortality in the first case was probably shock. The second patient lived three weeks after operation, necropsy revealing the fact that the remaining kidney was decidedly tuberculous. Of the cases showing a later mortality, two died of general tuberculous peritonitis, four of pulmonary tuberculosis, while the cause of death in the remaining four is not known. The longest interval between operation and death was seven years, this patient dying of pulmonary tuberculosis at the age of 37. Forty-five patients replied to letters asking for present condition. In 48 per cent. of the cases with painful and frequent urination before operation some bladder symptoms persisted, abnormally frequent urination being the most common. The history of each of these cases showed that bladder trouble had extended over a long period prior to operation. Of the 9 per cent. who reported no definite improvement in the bladder symptoms, each one had pronounced bladder involvement at the time of operation. Twenty per cent. reported that they were in perfect health and all the rest that they were greatly improved. One man, operated on eight years before, reported himself as entirely cured although his history showed that for three years previous to operation he had complained of frequent urination, a symptom which persisted for ten months after the nephrectomy. Pain in the back of a colicky nature was reported by twelve patients, while twenty-five reported pain of varying degrees in the back, side, or hip. Of the entire series forty-four had hematuria. All still had pyuria.

123. **Indigocarmin and Phenolsulphonephthalein Tests.**—Peterson shows that when indigocarmin and phenolsulphonephthalein are excreted simultaneously, the addition of sodium hydrate eliminates the color of the indigocarmin and brings out that of the phenolsulphonephthalein. Phenolsulphonephthalein is excreted by the kidneys in the same amount whether used alone or simultaneously with indigocarmin. The presence of indigocarmin does not interfere with the microscopic study of the specimen of urine. The growth of bacteria is not retarded by the presence of this dye in the culture. Five c.c. of a saturated solution of indigocarmin forms a suitable and safe dose for intravenous administration. A quantitative colorimetric estimation of indigocarmin can be carried out.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 20, II, No. 2964

1 *Treatment of Infected, Especially War Wounds. R. Morison.—p. 503.
2 *Report on Wound Treatment by Brilliant Green Paste. A. R. Short, J. S. Arkle and C. King.—p. 506.
3 *Use of Liquid Petrolatum in Treatment of War Wounds. H. M. W. Gray.—p. 509.
4 Reinfection in Syphilis; Observations on Twenty-Eight Cases. C. F. White.—p. 509.
5 *Medicinal Treatment of Gonorrhea. H. C. Donald and A. M. Davidson.—p. 512.
6 Operations on Nasal Sinuses Carried Out Through Temporary Opening in Septum (Transseptal). N. Patterson.—p. 513.
7 Dosage in Therapeutic Administration of Thyroid Gland Substance. A. E. Carver.—p. 515.
8 Case of Contracted Pelvis; Cesarean Section Thrice. A. Crook.—p. 515.

1. **Treatment of Infected War Wounds.**—Summary of Morison's technic: Under an anesthetic, usually open ether, cover the wound with gauze wrung out of 1 to 20 phenol and clean the skin and the surrounding area with the same lotion. Open the wound freely and, if possible, sufficiently to permit of inspection of its cavity. A guide—a finger is the best if the size of the wound permits of it, and if not a thick probe—should be introduced to the bottom of the wound so as to give a good exposure. In doing this special regard must be paid to nerve trunks and muscular branches of nerves, since the division of blood vessels, excepting the largest and of muscles of themselves does little harm as compared with that of the disability following nerve damage. Cleanse the cavity with dry sterile gauze mops, Volkmann's spoon, etc., and remove all foreign bodies. Mop the surrounding skin and the wound cavity with methylated spirit and dry it. Fill up the whole wound with a bismuth, iodoform, paraffin paste, rub it well in with dry gauze. Then remove all excess, leaving only a thin covering over the wounded surface. Dress the wound with sterile gauze and cover all with an absorbent pad, which is held in position by sticking plaster and a bandage. This dressing requires no change for days or weeks if the patient is free from pain and constitutional disturbance. Should, however, discharge come through, the stained part must be soaked in spirit and a gauze dressing wrung out of the same applied as a further covering. Redressing is very simply done. After removal of the old dressings the wound is covered with a dossil of wool soaked in spirit, and the sticky dirty looking discharge is wiped off the surrounding skin until it is clean.

2. **Wound Treatment by Brilliant Green Paste.**—The authors report favorably on the use of the paste introduced by Hey, consisting of brilliant green, boric acid, French chalk and liquid petrolatum. It is said to be nonpoisonous and painless. In the great majority of cases it almost completely sterilizes the wound in three days, so that secondary suture can be performed even in large wounds complicated by bony injury. Small, completely excised wounds can be sutured primarily. The wound need only be dressed about once in four days. No permanent residue is left to interfere with immediate healing. By this method they have been able to obtain healing within a fortnight of cases of compound fracture even when complicated by joint injury, big buttock wounds and deep muscle wounds. They have excised an elbow joint full of pus, and obtained primary healing in a fortnight.

3. **Liquid Petrolatum in Treatment of Wounds.**—The results of observations carried out in several casualty clearing stations, Gray says, show that liquid petrolatum has, almost without exception, a very beneficial action on the walls of a wound and on the tissues adjacent to the wound. It prevents development of the symptoms of inflammation in these parts and will cause such symptoms to disappear rapidly if they are already present. The skin remains or becomes normal in appearance; redness and swelling do not develop or, if present, disappear. Pain is assuaged. Performance of function becomes easier, although, of course, this is frequently restrained by therapeutic agencies and is therefore not evident.

Changes of dressings are comparatively painless. Liquid petrolatum is not antiseptic in the ordinary sense of the term. If a wound be "packed" with gauze wrung loosely out of the petrolatum, it is found that in two to four days the discharge in the wound swarms with organisms, although the surrounding parts are free from inflammation. The "wound" with the fluid part of its contents may be likened to a test tube containing nutritive medium in which organisms are thriving. In either case the addition of antiseptic will lessen or entirely inhibit the growth. If an antiseptic is dissolved or suspended in the liquid petrolatum with which the gauze pack is saturated, it is found that the wound remains or becomes sterile. Various antiseptics or mixtures of antiseptics have been used, with good effects in all cases, although these effects vary, possibly owing to selective effect of the particular antiseptic against the particular organism or to tolerance acquired by the organisms for the antiseptic employed against them. Those chiefly used up to the present are flavine, brilliant green, boric acid and iodoform. It is rather difficult to justify preference for any one. A combination seems desirable.

5. **Medicinal Treatment of Gonorrhea.**—Donald and Davidson claim that medicinal treatment of gonorrhea from a clinical and statistical point of view undoubtedly does not help but retards the cure of gonorrhea, and tends to produce chronicity.

Journal of Laryngology, Rhinology and Otology, London

October, XXXII, No. 10

9 Lateral Sinus Disease; Report of Three Cases. A. Ryland.—p. 305.
10 Some New Points in Anatomy of Nasal Septum, and Their Surgical Significance. J. L. Aymard.—p. 308.

Journal of Tropical Medicine and Hygiene, London

October 15, XX, No. 20

11 *Case of Espundia (Naso-Oral Leishmaniasis) and Three Cases of Kala-Azar in Sudan Treated by Intravenous Injection of Antimonium Tartaratum. J. B., Christopherson.—p. 229.
12 Generalized Vaccinia in Sudan Natives. A. J. Chalmers and R. G. Archibald.—p. 236.

11. **Espundia and Kala-Azar Treated by Intravenous Injection of Antimonium Tartaratum.**—Considering the difficulties which may be encountered in the operation of introducing the drug into the lumen of the vein in kala-azar patients, Christopherson advises that the smaller the quantity of fluid and, therefore, the smaller the syringe and needle required, the better, and therefore quantities which can be introduced with a hypodermic syringe with a rather large hypodermic needle are the most convenient. Stronger solutions than one-half grain to 20 minims of distilled water are liable to be irritating (1 grain tartar emetic to 40 minims sterile normal salt solution, or distilled water, can conveniently be made up and kept in a flask). As routine treatment 20 minims of such a solution may be injected, and if this is well stood, may be increased to 40 minims on the following day, and then every other day and increase of 10 minims each dose till 2 grains is reached. This for a couple of months, and then once a week for some time after. For practical purposes 3 grains may be taken as the maximum dose. The most noticeable clinical sign is the change in the native patient's skin from the dark, dirty, dry appearance characteristic of kala-azar patients, as if they had been washed with dirty water, to the normal, moist, sleek, supple condition. Increase in body weight is very noticeable. Temperature falling by lysis commences to fall a day or two after commencing injections, and reaches and remains at normal in about a fortnight. Christopherson has had good results from the use of this drug.

Lancet, London

October 20, II, No. 4912

13 Relations of Tuberculosis to War Conditions. A. Newsholme.—p. 591.
14 *Sterilization by Dakin's Solution and Occurrence of Secondary Hemorrhage. E. F. Bashford.—p. 595.
15 Retraction of Blood Clots. W. d'Este Emery.—p. 597.
16 Gastric Atony and War Neurasthenia. J. C. McClure.—p. 600.
17 Diathermy for Treatment of Certain Local Abnormalities of Skin. L. W. Bathurst.—p. 602.
18 *Relation of Case of Cerebrospinal Fever to Positive Contacts. P. Fildes and S. L. Baker.—p. 602.
19 Cardiac Digital Percussion. W. Gordon and C. E. W. Bell.—p. 603.
20 *Nervous Cretinism. F. G. Crookshank.—p. 604.
21 Occurrence of "Blue Pus" in septic Wounds. T. H. Kellock and C. R. Harrison.—p. 605.
22 Case of Strangulated Femoral Hernia. T. E. Coulson.—p. 606.
23 Case of Extra-Uterine Gestation. E. A. Constable.—p. 607.

14. **Sterilization by Dakin's Solution and Occurrence of Secondary Hemorrhage.**—It would appear from Bashford's experiments as if the local action of Dakin's solution was held in check by an efficient circulation either by providing protein containing fluid or by carrying off and rendering harmless the hypochlorites as they approach living tissues without entering into combination with them, that is, killing them.

18. **Relation of Cerebrospinal Fever to Positive Contacts.**—Fildes and Baker maintain that the case of cerebrospinal fever is not specially responsible for the spread of the disease and is infected by one of the positive contacts. They look on the patient as one of the rare individuals who cannot confine the meningococci to the nasopharynx and merely "carry." Their results also appear to indicate that in such a case the cocci pass very rapidly to the central nervous system after gaining access to the nasopharynx.

20. **Nervous Cretinism.**—The nervous symptoms that are associated in the child with atypical athyreosis, Crookshank says, are to be recognized as forming degrees of the state described by McCarrison as "nervous cretinism." "Nervous cretinism" occurs in England, possibly endemically, but certainly, if not sporadically, at any rate without obvious endemic associations. In almost every case that Crookshank has seen which appears to deserve the appellation of "nervous cretinism," there has been evidence of dysthyreosis in the mother or other members of her family. The earliest manifestations of mild "nervous cretinism" are generally regarded as tetany, and occur toward the end of the second year of life (or a little later), when the child has well learned to walk and talk. Following the tetany—or stage of remittent spasm—there may ensue a stage of weakness, with tottering gait, and a more persistent spasm that passes into a condition not to be distinguished from congenital spastic diplegia or Little's disease of moderate degree. In the more severe cases mental defect is obvious almost from very early days, and the early appearance of spasm with nystagmus leads to the confident diagnosis of congenital spastic diplegia.

The relation of these cases to the group of mild nervous cretinism is shown by the familial dysthyreosis and by the at least partial response to thyroid medication; sometimes by familial incidence. The mild cases whose nervous symptoms first attract notice toward the end of the second year or thereabouts are not cretins in the ordinary sense of the term, and frequently in the beginning are docile and pleasing children. They are sometimes, however, broad-headed and their hypothyroidal quality may be manifest in the arrangement of their forehead and hair and eyebrows, and in the waxen puffiness of their skin. No claim is made for the cure of established cases of Little's disease or congenital spastic palsy by thyroid tablets; but certain cases of young children, diagnosed by specially competent physicians as congenital spastic diplegia with amentia, have definitely responded to treatment by thyroid; while cases of tetany, spasm, weak legs and so forth, recognized as corresponding to McCarrison's milder cases of nervous cretinism, have become quite cured while taking the same substance. The effects, on similar cases, of parathyroid medication, Crookshank has not yet noted.

Archives des Maladies du Cœur, etc., Paris

September, X, No. 9, pp. 401-448

24 *Athlete's Heart. J. Heitz.—p. 401.
25 *The Soldiers with Disordered Action of the Heart. L. Gallavardin.—p. 408.

24. **Athlete's Heart.**—In Heitz' case the athletic proprietor of a physical culture studio had a very large heart of the type described by Shumacker and Middleton in THE JOURNAL, April 11, 1914, as the effect of immoderate athletic sports and

by Tørgersen in ski jumpers—a hypertrophic dilatation presumably from professional strain. But roentgenoscopy showed the aorta likewise dilated, and the Wassermann reaction was positive. The man had never had malaria or other severe infection or drinking habits; there had been a single dubious chancre ten years before but no other pathologic manifestations at any time until recently there had been some symptoms from the hypertrophied heart. This case and others cited by Heitz confirm the view that athletic training is harmless only when the myocardium has not already been damaged by some infection or intoxication. On account of the paucity of the information available in this line, strict supervision is necessary for athletes training for competitive events. It is not enough to count the pulse, measure the blood pressure and auscultate the heart, the subjective reactions must be investigated, and the thorax examined with the roentgen rays. The training should be stopped at once in case of indisposition. Those with a history of malaria or syphilis should be warned to give up training altogether when the cardiovascular apparatus seems to have been touched by the disease.

25. **The "Tachycardiacs."**—Gallavardin reproduces with comment most of the report recently published by the British Medical Research Committee on the soldiers returned as cases of "disordered action of the heart" or "valvular disease." In 150 cases in his own experience, the condition was serious in only two, the pulse from 110 to 150 and the blood pressure 170 to 180 mm. mercury; in all the rest no organic cause for the tachycardia could be discovered. In the grave forms the pulse ranged about 100, the pressure 160 mm., but even climbing one flight of stairs sends the pulse up to 170 or 180, and it does not subside to the former figure for five minutes or more. Sedentary service has to be found for the men in this class. Below the moderate cases, in the mild group, the pulse keeps between 60 and 80, occasionally reaching 90, with pressure of 140 or 145 mm. It may run up to 150 but subsides to the former figure in a few seconds after reclining. Men in this group can be set to driving artillery wagons and the like, to spare them from wearing a knapsack and long marching.

Gallavardin comments on the large numbers of these "tachycardiacs" we are encountering when before the war we had scarcely a suspicion of this vast field of nonorganic cardiac pathology, this tribe of men with palpitations, shortness of breath, and disordered action of the heart with no organic lesion to be found. He emphasizes that the war did not create this category of "cardiacs"; it merely has revealed them. These "cardiacs" existed just the same before the war, but they never felt the need for consulting a physician on this account, and merely sought light occupations behind counters, etc. The profession at large knew nothing of this army of nonorganic tachycardiacs, and the army physicians seem to have paid no heed to these men who were constantly dropping out of long marches and excused from carrying the knapsack. Those that did not drift into sedentary services were discharged from the army labeled endocarditis or hypertrophy of the heart. Consequently the profession during the first year of the war was amazed and skeptical at the wholesale dismissals from the army for endocarditis, tachycardia, etc., when the most skilful auscultation revealed nothing wrong. But they had to yield to the evidence, and recognize that there is a whole series of physical disabilities in this line—at least partial disability—which is at least as important as that due to organic heart disease. Infectious diseases have a great influence on the development, or rather the aggravation of these tachycardia neuroses, but a constitutional nervous predisposition is plainly evident in most of the cases. The overexcitability of the sympathetic system is not confined to the heart innervation.

He compares his 150 cases with those analyzed by the British committee, saying that time alone will tell the future of these cases. Aside from the graver cases, he does not think there is serious danger for the heart. Their rapid heart beat makes them poor runners, just as their emotional instability and trembling make them poor marksmen. Their dyspnea from exertion is never accompanied by hypertrophy or dilatation of the heart. The probabilities are that this overexcitability of the nervous system will calm down as they grow older. He queries whether this special circulatory excitability may not predispose to vasomotor paralysis in the course of various infectious diseases, and thus be responsible for the fatal outcome. The tachycardia is regularly paired with hypertension, and this may be an element of danger, setting up stable processes of hypertension. Still further peril lies in the possibility of actual organic disease developing in a heart overworked by this tachycardia. He adds that in 500 young men, all free from organic valvular disease and tuberculosis, the pulse rate during the revision examination was from 50 to 75 in 2.6 per cent.; from 75 to 100 in 25.6; 100 to 125 in 36.6; 125 to 150 in 27.2, and from 150 to 175 in 8 per cent. All of course were emotionally excited, but the figures illustrate the wide individual variation.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

July-September, VI, No. 7-9, pp. 193-272

26 Combined Rupture and Inversion of the Uterus. A. Brindeau.—p. 195.
27 *Elderly Primiparae. B. J. Kouwer (Utrecht).—p. 207.
28 Postpartum Eclampsia. E. Hauch (Copenhagen).—p. 224.

27. **Elderly Primiparas.**—Kouwer tabulates the findings in respect to 5,300 primiparas which demonstrate that the average duration of labor is from 16.6 to 17.1 hours in young primiparas, but jumps at once to 21.6 up to 25.9 hours in the elderly primiparas. The frequency of forceps deliveries increases in the same proportion. This longer duration of labor is probably, he says, the consequence of the functional enfeeblement of all the organs, including the endocrine glands which act on the uterus. This enfeeblement he ascribes to the delay in the physiologic development of the genital organs and endocrine glands, as the interval has been so long between the onset of menstruation and the completion of the cycle of functional development of the uterus. It is not necessary to assume any histologic changes in the soft parts; the trouble is merely inertia. But the amazing feature of his tabulation is that the dividing line marking off the elderly primiparas is at the age of 24. Below this, labor is physiologic; at 24 the duration averaged 21.6 hours, instead of 15.9 at 22, among 1,831 primiparas in his service. A similar dividing line of the "elderly" under 28 was evident in 3,460 primiparas at the polyclinic although the records there are not kept with equal care. An interval of six or seven years between the first menstruation and the first pregnancy ranks the woman among the "elderly."

Bulletin de l'Académie de Médecine, Paris

September 25, LXXVIII, No. 37, pp. 299-330

29 The Declining Birth Rate. Pinard and others.—p. 303. Continuation.
30 *Heart Accidents from Asphyxiating Gases. C. Fiessinger.—p. 322.
31 *Rubber Prosthesis for the Humerus. P. Delbet and Girode.—p. 328.
32 Therapeutic Action of Colloidal Sulphur. A. Cawadias.—p. 329.

30. **Heart Disturbance from Asphyxiating Gases.**—Fiessinger calls attention to the action on the heart of the new asphyxiating gases. They seem to be more complex than the chlorin gases which act on the respiratory tract. Their effects are more like those observed in the laboratories studying the fixation of nitrogen or in the manufacture of nitric acid. The industrial intoxication is slow and prolonged, while the intoxication from the drift gas is sudden and fulminating, but the symptoms in both are of the same cyanogen compounds type, syncopes with slowing of the pulse. This syncopal tendency is manifested at the slightest movement for months. One officer while on duty at an advanced post became intoxicated with this type of gas and was accused of simulation during the following months until the nature of his disturbances was differentiated.

With this sudden intoxication the man notices merely a fruity, apple-like odor in the air; then suddenly he feels benumbed, his limbs give way, and he feels a burning from his throat down to the pit of the stomach. Then come vomiting and drooling; increasing vertigo, the extremities icy; and unconsciousness follows, sometimes for several hours.

The pulse next day was retarded in the cases Fiessinger has seen, dropping at times to 25 or 30, but others have noted acceleration up to 100. The heart beat is weak and seems remote to the ear, but regular except occasionally a dull sound suggesting an auricular contraction not transmitted to the ventricle. The men have to lie horizontal, a syncope coming on at the least attempt to sit up. After from three to six months the pulse returns to its normal rate and, except for extreme weakness, the man can resume his ordinary life. Two soldiers presented a somewhat less grave clinical picture than this, and after their convalescence furlough had been extended one month they were almost entirely cured.

The symptoms in these cases gave the clue to the intoxication of a chemist experimenting in an industrial establishment with fixation of nitrogen from the air on aluminum, calcium and other bases, at a temperature of 1,850 C. In this case there was no appreciable improvement for a year, during which he was compelled to retain a horizontal position. At times his pulse dropped to 12; even when it was 40 the syncope returned when he attempted to sit up. With mild poisoning there are merely dizziness and slowing of the pulse. This is the cause of intoxication from automobile gases. The carbon monoxid cannot be incriminated as the amount is too small; the products of incomplete combustion of hydrocarbons seem to be exclusively involved. They act on the medulla and fatal cases are known in touring cars. Fiessinger has had several mild cases of the kind among chauffeurs; at first he ascribed the symptoms to stomach trouble and nicotine. He advises treatment of the acute intoxication with venesection and injections of etherocamphorated oil. Later the stomach should be treated with bismuth if there is hypersthenia, and the heart disturbances, when accompanied by syncopes, with theobromin and small doses of caffein. Small doses of strychnin may also render service, and bed rest should be maintained for months. Heart tonics, such as digitalis and strophanthus, seem to aggravate the condition. Some have reported benefit under epinephrin, but Fiessinger has had only uncertain results with it. In the discussion that followed, Pouchet remarked that the waste gases from automotors must be reckoned with now as one of the factors that detract from the healthfulness of city life.

31. **Rubber Artificial Humerus.**—Delbet and Girode bridged the long gap after resection of the humerus for sarcoma with a rod of hard rubber 15 cm. long. At the head end it was 5 cm. in diameter and only 21 mm. in the shaft. This endoprosthesis was introduced ten days after removal of the tumor. The piece proved a little too short and it had to be fastened to the lower stump with a wire instead of fitting into it as intended. The artificial humerus seems to be answering every purpose to date, two and a half months later, the arm rendering good service.

Journal de Radiologie et d'Electrologie, Paris

July-August, II, No. 10, pp. 593-640

33 Technic for Extracting Projectiles in the Skull or Spine. C. Villandre.—p. 593.
34 *Radiodiagnosis of Horseshoe Kidney. N. Voorhoeve (Amsterdam). —p. 599.
35 Radiologic Diagnosis of Fracture of the Spine in Men Buried under Debris. G. Detré.—p. 603.
36 The Electric Psychic Reflex. A. Zimmern and B. Logre.—p. 610.
37 Importance of Early Roentgen Diagnosis of Tibiotarsal Dislocation. Bec and Hadengue.—p. 620.
38 Technic for Locating Projectiles in the Tissues. A. Chéron. —p. 621.

34. **Radiodiagnosis of Horseshoe Kidney.**—Partial fusion of the two kidneys should be suspected when the inner margin of the kidney is parallel to the spine and the interval between is abnormally narrow. The lower margin on both sides is also abnormally low, and the kidneys cannot be moved to and fro although axial movement may be possible. The lower poles of the horseshoe kidney are necessarily closer to the abdominal wall than the spine, while with normal kidneys they are back of the anterior plane of the vertebrae. This aids further in differentiation as there is an apparent displacement of the lower margin of the kidney with ventrodorsal roentgenoscopy, different from what is observed with normal kidneys.

Paris Médical

September 29, VII, No. 39, pp. 257-272

39 *Treatment of Wounds of the Knee at the Advanced Operating Stations. A. Schwartz.—p. 257.
40 *The Circulating and the Stationary Blood. Prével.—p. 259.
41 Work in Rehabilitating the Maimed. P. Kouindjy.—p. 263.
42 War Wounds of the Kidney. Patel.—p. 266.
43 *Capillary Drainage of the Spinal Cavity. R. A. Gutmann.—p. 269.
44 Intravenous Injections of Quinin in Treatment of Malarial Cachexia. P. Lafosse.—p. 270.

39. **War Wounds of the Knee.**—Schwartz protests against the frequent practice of incising the capsule and severing the patellar ligament unless conditions absolutely compel this. It is often possible to clear out the wound from the side of the knee, leaving the patellar ligament intact. This should be the routine practice when the bone has not been fractured. With shattering of the bone, resection is inevitable and it takes a long time for the lesion to heal with solid consolidation in a good position, and the man will find it painful and tedious. However, a solid, straight leg with good ankle joint, is far preferable to all the artificial legs in the world. Hence, even when the knee has been badly shattered, he makes every effort to save it from amputation.

40. **The Circulating and Stationary Mass of the Blood.**—Prével argues that the influence of gravity on the circulation of the blood has not been paid the attention it deserves. Even in normal conditions the mass of the blood must be regarded as in two parts, one actively circulating and the other stagnating in peripheral vessels. The actively circulating mass of the blood is all that is evident in the erect position. Under the influence of gravity, as the subject stands still, the blood stagnates, especially in the peripheral vessels. Prével describes means by which we can estimate the proportional bulk of the orthostatic circulating and the stagnant blood. General massage on the reclining subject is probably the most effectual means for getting all the blood to circulate. The proportion of stagnating blood naturally increases with defective heart or vessel action. Determination of the proportion thus shut off from the blood stream may afford valuable information in nervous shock after war wounds. His device for the purpose is a dial attached to the Pachon oscillometer.

43. **Capillary Drainage of the Spinal Cavity.**—Gutmann introduces into the spinal cavity six or seven silk threads, fitting them into the Potain needle with which the lumbar puncture has just been made. Once in the cavity, the free ends of the threads hold them from slipping back as the needle is withdrawn. The indications for this effectual capillary drainage are met with in septic meningitis, and he urges others to give it a trial.

Presse Médicale, Paris

September 20, XXV, No. 52, pp. 537-544

45 *Chronic Intestinal Trouble and the Military Service. C. Laubry and L. Marre.—p. 537.
46 *The Plantar Reflexes. L. Rimbaud.—p. 539.
47 Graft from Tibia to Close Defect in Skull. C. Villandre.—p. 540.
48 The Fifth Cusp on Molar Teeth not necessarily a Sign of Syphilis M. Mozer and C. Chenet.—p. 541.
49 Solutions of Quinin for Injection. R. Dalimier.—p. 541.

45. **Chronic Enteritis and Military Service.**—Laubry and Marre comment on the difficulty of determining the fitness for service of men with bowel trouble. The general condition is the chief element in the prognosis; the weight and the temperature are more important than the laboratory findings. The tendency is to discharge from the army the men with chronic enteritis, but many of the men encountered in the hospitals in the home zone are declared cured about ten times a year. When there is merely colitis with constipation, and the general condition is good, the men should be kept under observation or sent back at once to active service. If the general condition is precarious or is growing worse, a temporary relief from army duties is indicated. If under surveillance and proper measures improvement does not follow and a special diet is required, the men should be temporarily relieved from active duty or be assigned to light duty. They urge revision of the decision at the end of three months, but insist that as much care and attention to detail should be applied at the revision as at the first examination.

A compulsory sojourn in a specialist hospital service, giving opportunity for thorough examination, should precede the final revision. This is the only way to avoid the numerous vexatious and expensive blunders made in the past.

46. **The Plantar Reflexes with War Wounds.**—Rimbaud seeks to systematize and estimate the importance of the reflexes induced by tapping the sole. The plantar flexion of the whole foot is identical with that of the Achilles reflex and has the same mechanism and significance. In hundreds of tests he always found this reflex abolished when the Achilles reflex was gone. Besides this tendon reflex, there is a muscle reflex, the flexion of the toes, which corresponds in the same way to the reflex induced by percussion of the tibialis anticus. Both of these reflexes give information in regard to the condition of the sciatic nerve, and especially of its popliteal branch. The disappearance of the flexion of the foot is an early sign of some lesion in the sciatic nerve, earlier even than loss of the Achilles reflex, as it is more sensitive than the latter. The toe reflex is abolished only when there are grave lesions or disease in the main sciatic or popliteal nerve, practically blocking the nerve. The loss of any muscle reflex indicates a grave lesion. With some slight lesion of the sciatic nerve, the flexion of the foot reflex may be abolished while the toe flexion is exaggerated. This plantar dissociation is thus a reliable sign of some lesion of the sciatic nerve but also that it is mild. It is thus an important guide in treatment of wounds of the thigh, etc.

Progrès Médical, Paris

September 8, XXXII, No. 36, pp. 295-302

50 *Diabetic Polyneuritis. A. Pitres and L. Marchand.—p. 295.
51 *Wire Ring for Shattered Bones. M. Sénéchal.—p. 297.

September 15, No. 37, pp. 303-310

52 Present Status of Treatment of War Wounds. A. Demmler.—p. 303.
53 Extraction of Projectiles under Screen Control. R. Didier.—p. 306.

50. **Diabetic Polyneuritis.**—Pitres and Marchand relate that, judging from their experience, diabetic polyneuritis develops just like ordinary polyneuritis of toxi-infectious origin. The prognosis is generally favorable. The toxic products developed in the course of the diabetes act on the nerves like any other toxic products of similar virulence. In a case described at length, ecthyma and gingivitis were the first warning symptoms of the disease. Then sugar was discovered in the urine and later the polyneuritis developed. It assumed a quadriplegic form, but it subsided as the glycosuria was brought under control. The patient was a man of 47; the painful hyperesthesia and paroxysms of pain had been most pronounced in the legs, as also the paralysis.

51. **Wire Ring for Shattered Bone.**—Sénéchal ties a wire around the sequesters and bone to bring the pieces into their proper relations, and relates that this wire *cerclage* has been applied in sixty-six cases to date. Sometimes he uses two or three of the wire rings. The history of some typical cases, with the roentgenograms, shows the advantages of this method of bridging the gap. He does not try to reconstitute the bone shaft, but bridges the gap with the bunched sequesters. The aim is to have the sequesters serve as a kind of splint to hold the parts in place. The plaster cast is fitted on at once, while the patient is still under the influence of the anesthetic. He always uses an open cast with high metal loops spanning the gap left at the site of the wound.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 22, XLVII, No. 38, pp. 1217-1248

54 *Results of Suprapubic Prostatectomy. F. Suter.—p. 1220.
55 Bacillary Dysentery in Switzerland. Hunziker.—p. 1226.
56 *Factitious or Real Disease. A. Haslebacher.—p. 1232.

54. **Suprapubic Prostatectomy.**—Suter states that in his seventy-five operative cases of suprapubic prostatectomy, one patient succumbed to embolism, two to insufficiency of the kidneys and two to heart disease. The other patients all recovered and the results were excellent, aside from this mortality of 6.7 per cent. Even with the best of technics, the operation is not free from danger, but he advocates it for all just entering on regular catheter life. Especially for the younger *prostatikers*, he says, this technic is preferable as the prognosis is better in the young, while they will have more years in which to enjoy their release from prostate trouble.

56. **Differentiation of True from Factitious Painful Affections.**—Haslebacher comments on the common neglect of digital palpation in cases of alleged muscular, nervous and traumatic lesions. Palpation is usually most instructive in the very cases in which other methods of exploration have the least to show. We should never neglect an opportunity to exercise and perfect the "eyes in our fingertips." When a war wound or other injury does not heal in the usual time with restored function, some complication is responsible, irritation of nerves, development of adhesions, spastic hypertony, stagnation of blood in certain veins, or exudates or deposits in joints. Whenever a nerve is suffering at any point in its course from any of the above troubles, the circulation in the nerve is interfered with, and there may be pain, anesthesia or other symptoms at or near or remote from this point, which is always more or less tender. He seeks the tender point by making spiral movements with pressure around the suspected point. When it is reached, the finger feels a slight contraction and the patient makes an uncontrollable expression of pain and the parts under the fingers may stiffen. As every one of these nerve points has its own symptoms, so every symptom can be followed to its nerve-point source. The most commonly involved nerve points are in the orbit, temple, mastoid process, in the neck at the trachea or thyroid, in the interspaces, the ileosacral region, the pelvis, the inside of the thigh, the knee and the malleoli. Anemia, gout, rheumatism and arteriosclerosis are the principal causal factors, aside from trauma, and discovery of these tender points confirms the reality of the disturbances complained of. This is the main field for physicotherapy, especially massage and heat. In chronic cases, a severe aggravation of the symptoms follows after a few days, usually in the second week. This aggravation is almost infallible testimony to the reality of the trouble. If it does not occur after energetic treatment for ten or fourteen days, we have good reason to suspect the truth of the patient's complaints, unless he is so debilitated that the organism cannot be aroused to fight the disease.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 23, XXXVIII, No. 76, pp. 1025-1040

57 Prophylactic Value of Vaccination against Typhoid. M. Sammartino.—p. 1025.
58 Contamination of Commercial Distilled Water for Microscopy. L. Dozzi.—p. 1040.

Policlinico, Rome

September 30, XXIV, No. 40, pp. 1205-1232

59 *Bacteriologic Diagnosis and Serotherapy of Epidemic Cerebrospinal Meningitis. O. Paleani.—p. 1205.
60 Treatment of Tetanus. S. Puglisi.—p. 1210.
61 *The Ten Commandments with Fracture of the Femur. B. Schiassi.—p. 1211.
62 Ascending Paralysis during Malta or Undulant Fever. F. d'Alessandro.—p. 1213.
63 Malaria in the Army. G. Apicella.—p. 1216.
64 Factitious Lesions of the Ears. A. F. Ratti.—p. 1217.

October, Medical Section No. 10, pp. 389-428

65 Modification of the Electrocardiogram under the Influence of Exertion. N. Pende.—p. 389. To be continued.
66 *The Oculocardiac Reflex. G. Fumarola and E. Mingazzini.—p. 401.
67 *Indicanemia. A. Fara.—p. 421. Commenced in No. 9, p. 385.

59. **Epidemic Meningitis.**—Paleani emphasizes the importance of making the serum from the strains of meningococci found in the cases during the epidemic. When the cerebrospinal fluid was found limpid and sterile, he took cultures to make the antiserum from the nasopharynx. For prophylactic purposes, the nasopharyngeal secretions were all that was necessary. There are liable to be numerous pseudomeningococci and parameningococci, but agglutination generally identifies them. The findings were positive in only thirty of the forty-three specimens of cerebrospinal fluid sent to him for examination during the last five months. In the other specimens pneumococci or tubercle or other bacilli were found, or else the case proved to be one of meningeal involvement in mumps, or embolic softening of the brain. True epidemic meningitis usually has more or less of a septicemic character

and he consequently administers the antiserum subcutaneously as well as intraspinally, and he advocates fairly large doses daily.

61. **Fracture of the Femur.**—Schiassi warns against extension with weights when the stumps are not exactly coaptated after simple fracture of the femur. Roentgenoscopy has shown that only approximately normal conditions are restored by this means. When a fracture with overlapping stumps has been reduced under general anesthesia, the plaster cast should include the foot and entire leg, the root of the other thigh and the whole of the pelvis. Roentgenoscopic control of the reduction is indispensable. If there is no suspicion of infection, this can be done while the patient is still on the operating table, before the cast is applied, examining the reduction from both the front or rear and the side. No antiseptic to date can arrest established infection in a fracture. The focus must be cleared out and drained, a counter opening made on the side opposite the wound. The leg should be immobilized but even an open plaster cast cannot be applied until the infection has become attenuated. He discusses further the technics suitable for the different varieties of fracture.

66. **The Oculocardiac Reflex.**—With a single exception, Fumarola's findings confirmed those of others in respect to the presence and significance of the oculocardiac reflex.

67. **Indicanemia.**—Fara reviews the literature on indicanemia and affirms that the evidence to date testifies that indicanemia is physiologic. It assumes pathogenic importance only when it is above the normal range. When speaking of it as a pathologic phenomenon it should be styled hyperindicanemia. In forty persons with various diseases and the healthy controls—all without azotemia—the indican content of the blood ranged from 0.32 to 1.6 mg., fluctuating besides with the diet. In one healthy subject it ran up from 0.64 to 1.28 mg. a few hours after eating 300 gm. of meat. The azotemia findings never fluctuated parallel. In thirty-two cases of nephritis without uremia, the indicanemia reached 1.67 mg., and in twenty-eight with uremia it reached 4.27 per thousand. The Obermayer technic is best for detection of indicanemia in the clinic, as it does not begin to give positive findings until the indican content is above the normal range, and thus it testifies to defective elimination by the kidneys.

Riforma Medica, Naples

September 29, XXXIII, No. 39, pp. 933-952

68 *Primary Prostatitis. R. Porcelli.—p. 933.
69 *Case of Aleukemic Lymphadenia Consecutive to Mumps. S. Fichera.—p. 936.
70 The Medical Students Serving in the Army. E. Maragliano.—p. 943.
71 Present Status of Rat-Bite Fever. G. Molinari.—p. 944.

68. **Primary Gonococcus Prostatitis.**—Porcelli's patient complained merely of a sensation of cold localized in the urethra its entire length, but nothing could be found to explain it, and he grew thin and neurasthenic. Closer examination revealed a chronic prostatitis, and gonococci were cultivated from the pus expressed. There was no history of gonorrheal urethritis, and there was much to suggest that the prostatitis was primary and had induced the sexual neurasthenia.

69. **Aleukemic Lymphadenia.**—The special feature of the case described was that the hypertrophy of lymphatic tissue first became apparent during convalescence from a mild case of mumps.

Revista de Medicina y Cirugia de la Havana

September 25, XXII, No. 18, pp. 477-504

72 Present Status of Radiotherapy in Dermatology. V. P. Castello.—p. 477.
73 Analysis of Potable Waters in Cuba. R. de Castro y Bachiller.—p. 487.

Semana Medica, Buenos Aires

August 2, XXIV, No. 31, pp. 117-148

74 Quackery at Buenos Aires. (Adivinacion.) A. d'Alessandro.—p. 117.
75 *Interposed Flap in Treatment of Ankylosis. E. M. Olivieri.—p. 127. Continuation.
76 Aneurysm of Mitral Valve in Man of 44. R. A. Bullrich.—p. 137.
77 Nationalization of Asistencia Publica. E. R. Coni.—p. 140.

75. **Operative Treatment of Ankylosis.**—Olivieri gives thirty-five illustrations of the technic and outcome of treatment of ankylosis by opening up the joint and separating the parts with a pedunculated flap of muscle or tendon tissue. The general principles are the same for all joints.

Siglo Medico, Madrid

September 22, LXIV, No. 3328, pp. 705-724

78 The Functioning of Kidneys Containing Calculi. A. P. Martin.—p. 706.
79 Action of Ether on Tubercle Bacilli in Sputum. M. J. Barilari.—p. 709.
80 The Lower Class Degenerate Criminal from the Psychologic Standpoint. (Los apaches.) A. Sanchez-Herrero.—p. 714.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

March, XVII, No. 2, pp. 187-287. German edition

81 *The Lipoid Products from Degeneration of Nerves. F. Shionoya.—p. 187.
82 *The Roser-Nélaton Line. I. Motoshima.—p. 269.

81. **Lipoid Products of Destructive Metabolism in Degenerating Nerves.**—This report of Shionoya's extensive experimental research in this line is accompanied with two colored plates showing the contrast staining in sixty-seven different specimens. In most of the experiments the nerves were crushed but in a few they were cut. The work was done on cats and dogs.

82. **Nélaton's Line and the Hip Joint.**—Motoshima remarks that many physicians trust to the line connecting the anterior superior iliac spine and the tuberosity of the ischium as the mariner trusts his compass. They assume that invariably the tip of the greater trochanter is crossed by this line when the longitudinal axis of the femur is held at a right angle to the line. When the trochanter extends above this line, pathologic conditions are assumed as infallibly responsible for this. Motoshima has been studying the anatomic relations between them in 114 persons and measurements on numerous cadavers. The minute details of all are tabulated. They show that the irregularity of the basal points renders uncertain any deductions therefrom, especially when there is a history of rachitis. The greater trochanter extends above the line in normal conditions when the shaft of the femur is at a right angle. As a guide to the region we can accept the line as crossing the point of the greater trochanter at the point where it can be most readily palpated.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 25, II, No. 8, pp. 671-750

83 *Do Animals Feel Pain? (Voor en tegen proeven op levende dieren.) G. van Rijnberk.—p. 671. Continuation.
84 Pharmacologic Study of Action of Optochin on Heart and Vessels. G. ten Doesschate and W. S. van Leeuwen.—p. 676.
85 Crystalloid Formation in the Retina. P. J. Waardenburg.—p. 690.
86 The Domain of Psychanalysis. G. J. Huet.—p. 700.
87 Recurring Intrameningeal Hemorrhages Simulating Meningitis in Apparently Healthy Young Physician. P. B. Westerhuis.—p. 702.

83. **Do Animals Feel Pain?**—The first part of van Rijnberk's study of this question was reviewed in these columns last week, page 1745. He here cites further examples, such as that if the tail or part of the body of a honey-sucking bee or male copulating shrimp or frog is cut off, the creature continues undisturbed to suck honey and the male does not release the female from his embrace. The twitching of the skin of a horse is a reflex action which occurs the same if the communication with the brain is shut off. He says further that veterinarians report that quite a considerable operation can be done on the large, herbivorous domestic animals while they are feeding and they may continue feeding without interruption. Dogs, cats and rabbits after severe operations in the laboratories are as lively and frolicsome as before so soon as the effect of the general anesthesia has passed off. He adds that dogs cannot be trained by the eyesight alone; there must always be some pleasurable or disagreeable experience connected with the act in which it is being trained. Even in man, he continues, the sensation of pain seems to be restricted to the outlying parts of the body. It is still a question whether sound organs in the thoracic and abdominal

cavities are sensitive to pain. "In short," he concludes, "the attempt to answer the question 'Do animals feel pain?'—which the layman answers glibly in the affirmative—is to step on a treacherous trapdoor which drops one into a hornets' nest of philosophy, psychology and biology."

Hospitalstidende, Copenhagen

September 5, LX, No. 36, pp. 861-884

88 *Gastric Cancer Simulating Malaria. C. Rovsing.—p. 861.

88. **Gastric Cancer Simulating Malaria.**—In both of the two cases described there were long paroxysms of fever, accompanied by vomiting once each time but with no other indications of digestive trouble. The first patient was a sailor, 47 years old, who began four years before to have attacks of fever, running up to 102 or 104 F. Then he vomited and the fever subsided. These attacks returned every third day for a time. Later the intervals became much longer and irregular. After two years of freedom they returned at three or four day intervals. There were never any signs of jaundice, and the bowel functioning seemed to be always regular. During the febrile periods he complained sometimes of pains in the lumbar regions and spine, but there was never hematuria or sand in the urine. The febrile attacks had been ascribed in turn to malaria, septicemia, pyelitis and cystitis, but finally, by exclusion, attention was focused on the stomach although no tumor could be felt. The functional tests and roentgenoscopy revealed stenosis of the pylorus from cancer.

The other patient was a man of 49 who began to have chills followed by fever running up to 104 F., occasionally accompanied by vomiting. These febrile attacks returned every third or fourth day but sometimes the fever kept up for four or five days at a time. He was treated with quinin and arsenic for malaria without results, and no parasites were found in the blood. By the fourth month he began to have a sensation of oppression in the epigastrium, nausea and vomiting after meals, with occult blood in the stools. The man was restored to clinical health by resection plus gastroenterostomy, and he survived for over three years before death from recurrence of the adenocarcinoma. At the first operation it was found to have involved both stomach and duodenum and some lymph glands, and it pressed against the pancreas. Rovsing has found five similar malaria-like cases of gastric cancer on record. One (Halla) was a necropsy surprise after ineffectual quinin treatment of "four day fever." In one of Hampeln's three cases the patient was dismissed from the hospital as the "malaria" had proved refractory to a course of quinin treatment, but the man returned three months later with a large tumor in the epigastrium. Necropsy confirmed the cancer but no metastases could be discovered. In his other cases the cancer was evident along with the malaria-suggesting symptoms.

The lack of symptoms of dyspepsia in the early stages in these cases is misleading. In Bühring's case (1889), there were no symptoms except those suggesting malaria to the very end; necropsy disclosed an ulcerating carcinoma and abscess in the frontal lobe. This was the only one of all the cases mentioned in which there was anything to suggest pyemia. If the fever is due to absorption of a toxin produced by the cancer, one would expect to find it continuous. More probably the toxic products generated in the stomach from the retention by the closed pylorus caused the fever when they reached a certain level. The vomiting cleared out the stomach, and there was no more trouble until this level had been reached again in the course of three or four days. This assumption is corroborated by the fact that Rovsing's first patient had one or two of the febrile attacks while convalescing from the operation, each yielding immediately to lavage of the stomach. The fever is thus not a contraindication for operative measures as the cancer itself is not directly responsible for it. The prognosis of these cases is comparatively good as is evidenced by Rovsing's first case. There had been symptoms for four years and the man has been in fine health to date since removal of the adenocarcinoma in June, 1916. It was a papillomatous tumor displaying little tendency to grow down into the depths, and was sharply circumscribed, although spreading over the lesser curvature, mostly on the rear wall and pylorus.

Ugeskrift for Læger, Copenhagen

August 30, LXXIX, No. 35, pp. 1439-1478

89 *Habitual Rectum Constipation V. T. E. H. Thaysen.—p. 1439. Commenced in No. 34, p. 1398.

89. **The Clinical Picture with Rectum Constipation.**—Thaysen, in this fifth article on habitual constipation, discusses only the clinical and roentgenologic aspects of what he calls rectum obstipation. He emphasizes that chronic constipation is not accompanied by pains unless the colon is involved, and predominantly the ascending colon. As with the latter the pains are restricted to the right iliac fossa, they are often ascribed to chronic appendicitis. Of his thirty-two patients with this "ascending constipation" the appendix had been removed on account of the persisting pains in seven. In his total series of 112 patients with chronic habitual constipation, appendicectomy had been done in eleven cases and without improving conditions in any instance. When the descending colon is involved with rectum constipation, there is usually tenderness in the left side. The pains assumed the character of colic pains only in 6 of his total 112 cases. In these 6 cases of spastic rectum constipation the different parts of the colon were involved in about the same proportions. Thaysen agrees with Pinkus that the disturbances from habitual constipation are often erroneously ascribed to gynecologic lesions.

In discussing the causes of habitual constipation, he relates that in six healthy persons repeatedly examined by rectoscopy or roentgenoscopy and digital exploration of the rectum, it was never found entirely empty. The accumulating feces could stay in it for eight hours during the day and fifteen hours including the night without inducing a desire for defecation. This suggests that the reflex inducing defecation is not started by contact of the rectal mucosa with fecal matters, as some believe. This and other facts cited seem to demonstrate that the defecation impulse proceeds from the central nervous system, started by some reflex from the digestive tract, the change to an upright position in the morning or from pylorus functioning after a meal. The physiology of the sphincters is complicated, three centers having been already found that seem to regulate it, one in the sympathetic nerve ganglia in the pelvis; one in the sacral nerves, and—in apes—one in the anterior central convolution. The mechanical effect of straining at stool is reenforced by a deep inspiration position of the diaphragm and by the contraction of the pelvic floor muscles which holds the pelvic organs up and prevents their sliding down. Weakening in any of these factors favors constipation, and also the unphysiologic high seat of the water closet.

He gives the details with the roentgen findings in 6 cases of the different types of rectum constipation, that is, retention of a considerable amount of feces in the rectum for two days without defecation. Sagging of the transverse colon does not seem to be an appreciable factor in constipation of this portion of the bowel. The distance from the umbilicus was less than 5 cm. in 2 cases of this type in men, and in 6 men and 9 women with retention any where in the colon. In 4 men and 5 women with this latter type, the distance was from 6 to 9 cm.; in 9 women it was from 10 to 12, and in one woman 13 cm. One of his tables giving the details of 74 cases of rectum constipation shows that there were no pains in 20 of 29 pure cases; no pains in one of 8 cases of the same, plus retention in the ascending colon; in one of 3 cases of rectum constipation plus retention in the transverse colon, and none in 17 among 34 cases of rectum constipation plus retention in various portions of the colon from cecum to sigmoid flexure. With pure constipation in the ascending colon, pains were pronounced in 19 of 23 cases. In none of his cases of rectum constipation did he ever find the rectal sphincter abnormally contracted, not even in his 6 cases of spastic rectum constipation, but he noted an unmistakable spasm of the sphincter in 3 nervous patients with no tendency to constipation. Sphincter spasm can generally be traced to an anal fistula or hemorrhoidal tumor.